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[54] **RECORDING SYSTEM FOR JUDICIAL PROCEEDINGS**

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[52] **U.S. Cl.** ..... **179/100.2 MD,** 179/100.2 S
[51] **Int. Cl.. G11b 23/18,** G11b 23/36, G11b 27/30
[58] **Field of Search** ..... 179/100.25, 100.2 MD

[56] **References Cited**

UNITED STATES PATENTS

3,591,734	7/1971	Abbott	179/100.2 S
2,660,621	11/1953	Billar	179/100.2 S
3,230,644	1/1966	Irazoqui	179/100.2 MD
3,227,814	1/1966	Ferris et al.	179/100.2 S

FOREIGN PATENTS OR APPLICATIONS

763,341	12/1956	Great Britain	179/100.2 S

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[57] **ABSTRACT**

An electronic recording and playback aid for use in stenographic reporting, by means of which the speakers' voices are recorded and later played back to prepare a typewritten transcript of their words. Identification of which speaker is speaking at a given time is enabled by a unit associated with the recording apparatus and having a key for each speaker, the court reporter or attendant operating the appropriate corresponding key when a given speaker is speaking. Operation of the key applies a particular frequency of signal to a channel or track separate from that in which the speech is recorded, the frequency or tone continuing throughout the speech by that speaker, until a different key for a different speaker is operated. A light associated with each key is also automatically turned on when that key is operated, so that the operator can assure himself that the proper key is operated. When the recording is later played back, the particular speaker's identification signal is automatically detected and used to turn on the light associated with the corresponding speaker's key, while the speaker's words are also being played back. This enables the operator on playback to start at any point on the tape with the speaker automatically identified by the light associated with his key, and without any interference with the sound of the recorded words.

7 Claims, 6 Drawing Figures

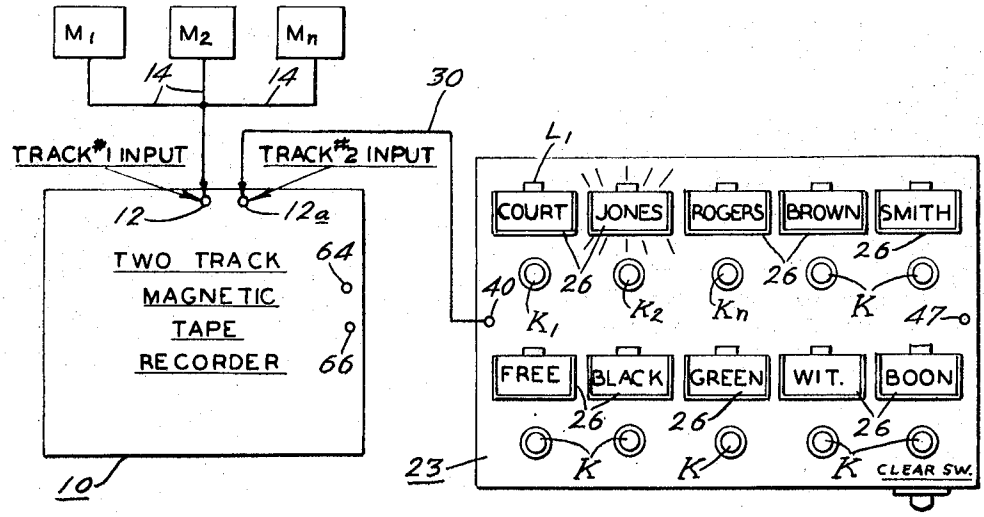


FIG.1.

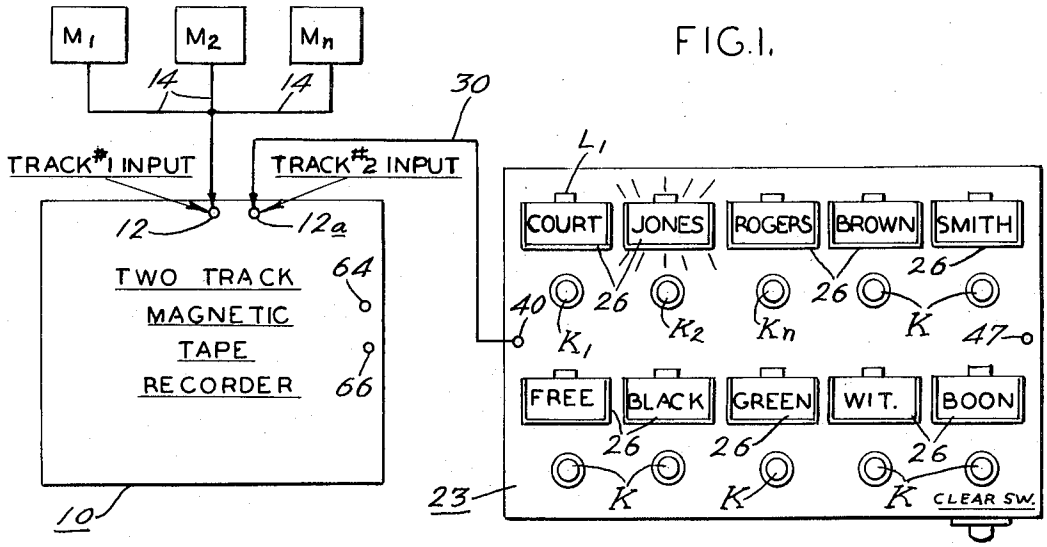


FIG.2.

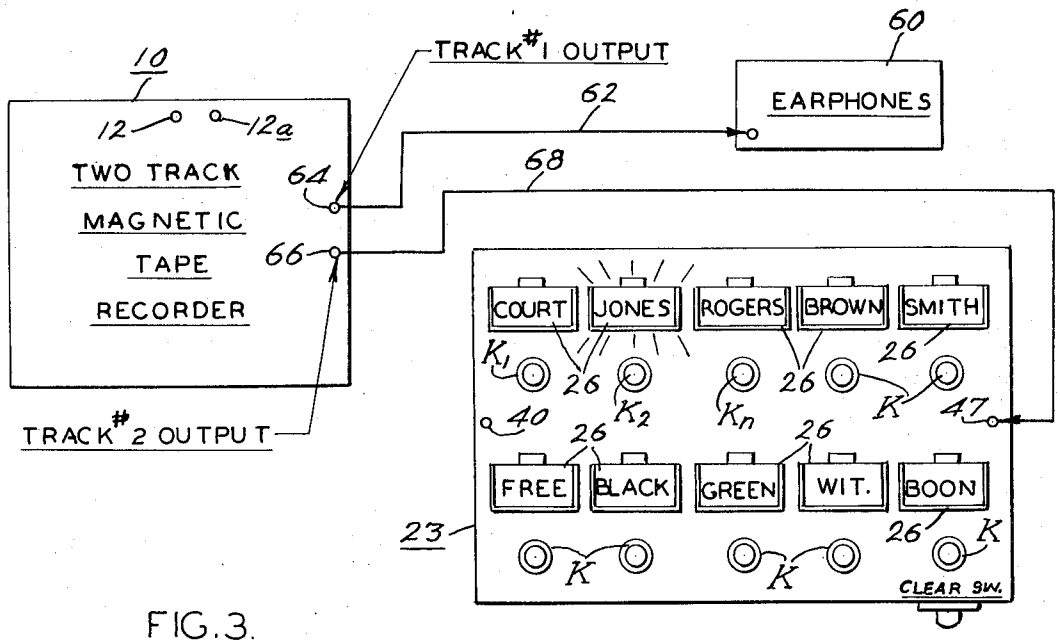
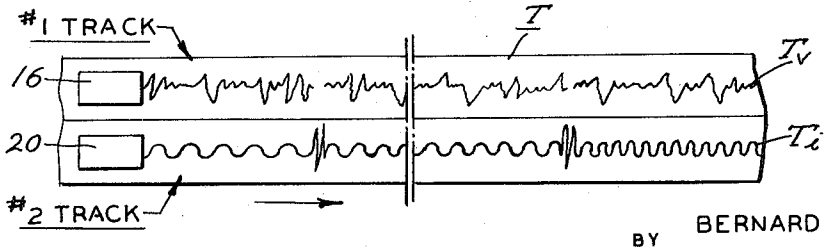


FIG.3.



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FIG. 4.

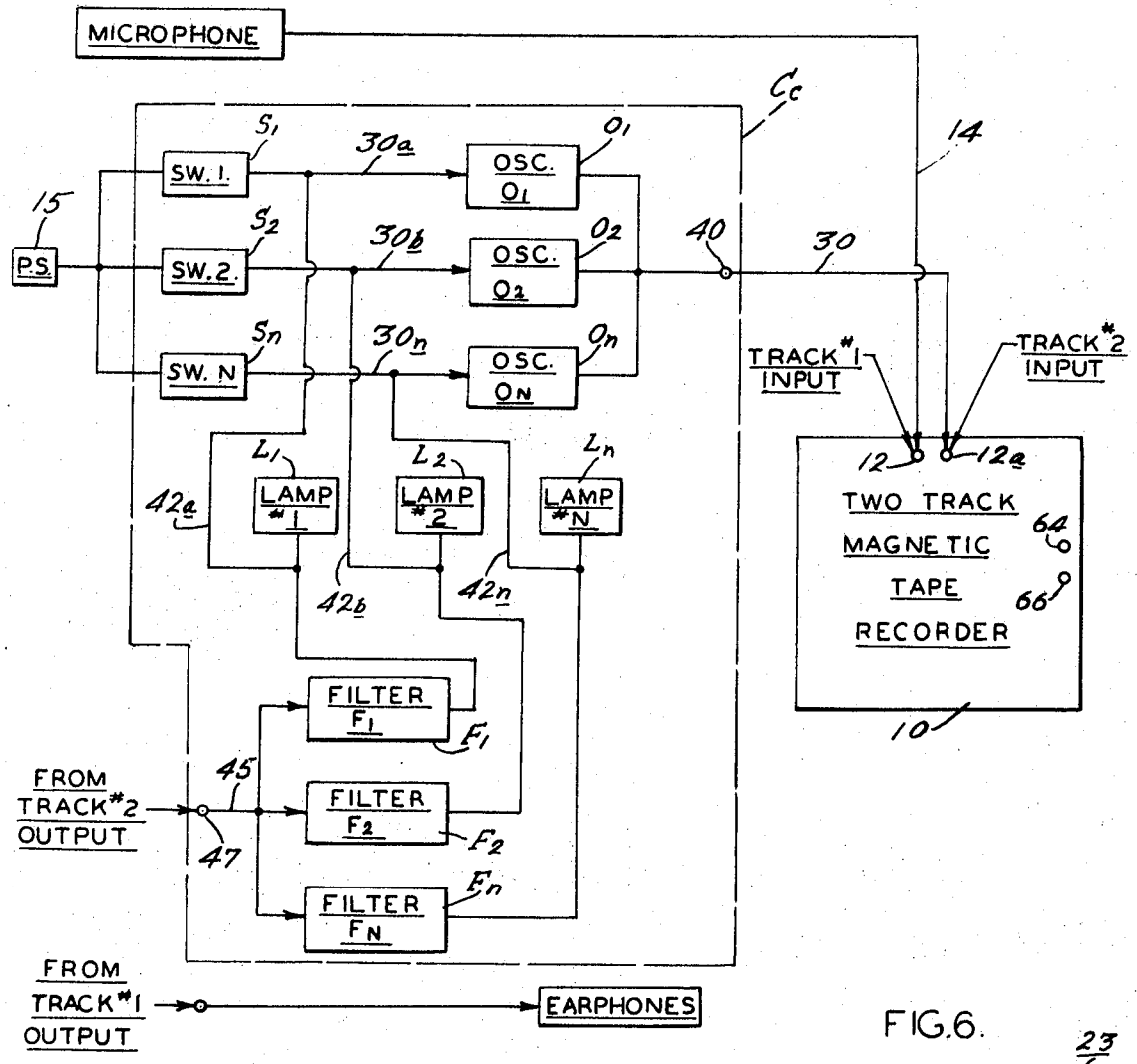


FIG. 5.

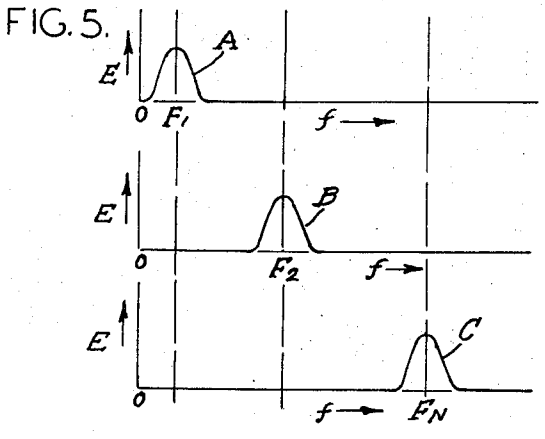
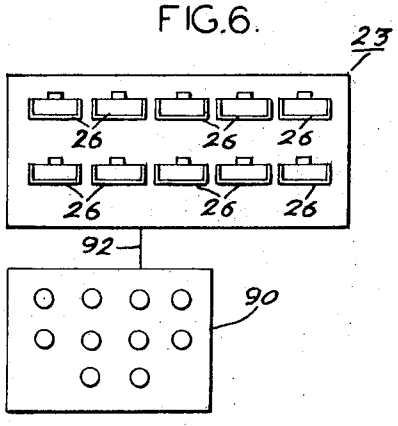


FIG. 6.



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RECORDING SYSTEM FOR JUDICIAL PROCEEDINGS

The present invention relates to recording devices and more particularly to a system for recording proceedings from which an accurate permanent transcript can be reproduced in an accurate and efficient manner.

The system of the present invention is particularly suited for use in reporting judicial proceedings such as court trials, depositions and the like, although it has many other useful applications where an accurate transcript of the material recorded is needed.

The present invention is designed to overcome some of the drawbacks and disadvantages of presently used recording and transcription systems. For example, one of the older conventional systems used in judicial proceedings is one employing a court stenographer or reporter who records the proceedings on a stenographic machine. The notes produced by this machine are then read and typed to make a permanent record. Since it is essential in judicial proceedings that the final transcript be a highly accurate record of precisely what was said at the proceedings, the accuracy of the final transcript depends in large measure on the experience and skill of the stenographer. At present, it is noted that there is a shortage of truly competent court reporters. Additionally, it has been found that the system is rather time consuming and costly, and does not always satisfy the needs of every case where oftentimes it is essential to have a transcript of a particular day's proceedings on the same day so that the transcript can be reviewed in preparation for the next day's proceedings. Often where the typist is someone other than the court stenographer, the stenographer will transcribe his notes to a conventional recording device from which the typist makes the permanent record. This, of course, adds more delay and cost to the process of preparing an accurate, permanent transcript. Furthermore, where stenographic notes alone are relied upon, in the event of a disagreement as to whether the notes accurately represent the actual testimony, there is no direct evidence to settle the disagreement.

Other systems have been proposed which employ electronic recording devices for recording the voices of the persons taking part in the proceeding and incorporating means for applying one or more audible tones to the sound record to identify the various persons whose voices are being recorded. For example, in accordance with one system, the identifying signal is recorded and superimposed simultaneously with the voice recording. It has been found that this system is not entirely suitable for the reason that often the identifying signal superimposed on the voice signal obscures portions of the spoken material being recorded. In this event, it may be impossible to reproduce a complete and accurate transcript. Furthermore, oftentimes the identification signals for a plurality of persons are not sufficiently distinct from one another, and this presents the problem of correlating particular portions of a recording with the proper person.

In accordance with another recording system, the record is made upon a record strip on which a sound track may be impressed by a sound recording and reproducing unit and wherein means is provided for perforating the record strip at selected locations to identify each speaker each time he begins to speak. A disadvantage of this system, however, is that the record strip must be visually examined to determine the speaker, and the identification signal is not continuous for the entire time the speaker's voice is being recorded. Further, since there is no visual means for determining accuracy of the identifying code during the recording, there is the possibility of an incorrect identifying code being applied for a given speaker.

In accordance with the present invention, there is provided a system for recording voices of a plurality of speakers and for enabling later identification of each voice with the proper corresponding speaker. The system includes means for producing voice signals representative of said voices and means for recording said voices upon a sound storage medium; a plurality of sources of identifiably different voice-identification signals, one for each of said speakers, and means selectively actuatable by an operator for separately recording on said sound storage medium, continuously throughout each time one of said voice signals produced by one of said speakers is being recorded, that one of said different voice-identification signals corresponding to the voice then speaking, in a manner to permit electrical separation of said voice-identification signals from said recorded voice signals upon later reproduction of signals on said storage medium. In this manner, there is continuous identification of the speaker during reproduction of each voice signal without interference with the sound of each voice by the voice-identification signals. The system further includes means for reproducing said voice signals and their corresponding voice-identification signals from said storage medium, and discrimination means responsive to said reproduced voice-identification signals for producing a visual indication of the identity of the speaker whose voice is being played back.

In the preferred form of the present invention, the system incorporates a recorder, for example, a multitrack magnetic tape recorder having means for recording on one track the voices of all of the parties and a second track for a continuous identification signal of a given frequency for each of the parties. The system further includes a panel having a plurality of stations, one for each of the parties, each station having a key or the like connected by a circuit to means for recording a voice-identification signal on the tape and operable simultaneously to operate visual indicia means such as a light. During the recording, the operator depresses the key on the panel corresponding to the speaker, which key operates through the associated circuit to impress the proper voice-identification signal on the tape and simultaneously to energize the light on the panel corresponding to that speaker. Accordingly, there is provided visual indicia means showing the operator which voice-identification signal is being recorded, simultaneously with the recording of the voice of each speaker. In the process of transcribing from the tape to make a permanent record, the recorder is connected to an input terminal of the control unit whereby as the tape is played back, the light indicia means for the party's voice being played back light up, to provide continuous visual identification to the transcriber of the identity of the voice for the entire period of the recording. In this manner, there is positive identification of each of the speakers during the recording and playback to eliminate any possible identification errors in the permanent record, without audible interference

with the reproduced voice sounds. Accordingly, it is believed that permanent transcripts of proceedings, particularly legal proceedings, utilizing the system of the present invention will be more acceptable to the legal profession from a contestability standpoint than presently used systems.

These and other objects of the present invention and the various features and detailed description of the operation of the system are hereinafter more fully described with reference to the accompanying drawings wherein:

FIG. 1 is a schematic representation of the system of the present invention set up for recording;

FIG. 2 is a schematic of the system of the present invention set up for transcribing;

FIG. 3 is a fragmentary enlarged schematic representation of the tape showing the sound track and the voice identification track;

FIG. 4 is an electrical schematic of the voice identification control circuit;

FIG. 5 is a chart showing the frequency responses of various filters used in the circuit of FIG. 4; and

FIG. 6 is a modification of the basic system wherein the actuating keys for the voice identification control unit are in a separate assembly.

Referring now to the drawings and particularly to FIG. 1 thereof, there is illustrated the system of the present invention set up for recording. The system includes a conventional recording apparatus **10**, for example a two-track magnetic tape recorder having an input terminal **12** connected through a circuit to a recording head for making a magnetic record designated as T_r on the tape T (see FIG. 3). A plurality of microphones M_1, M_2, M_n for the different speakers are connected through suitable electric leads **14** to the input terminal **12.** Operation of this part of the system is conventional, the recorder **10** including means for connection to a suitable power supply **15** (FIG. 4) and a conventional circuit including a control switch for actuating the tape whereby voice input through the microphones M_1, M_2, M_n is recorded by means of the head **16** (FIG. 3) on the voice track T_v.

In accordance with the present invention, the system includes means for selectively applying to the tape T a continuous voice identification signal by means of a recording head **20**, the voice identification track being identified T_i in FIG. 3. To this end, there is provided a voice identification control unit having a panel **23** with a plurality of person identification stations. Each station on the panel includes a bracket or frame **26** for supporting an identification card for a speaker such as "Court," "Jones," etc., and a light indicator L, and a selector button or key K operable through a control circuit C_c (FIG. 4) to effect recording of a voice identification signal on the tape T. The control unit is connected to the input terminal **12a** of the recorder **10** by the lead **30.** Accordingly, during a recording procedure, the operator, for example the court reporter, simply actuates the appropriate key on the panel which through the control circuit produces a continuous voice identification signal on the tape for the speaker and illuminates the appropriate lamp on the panel to provide visual indicia showing that the identification signal corresponding to the speaker is being recorded. When the speaker changes, the operator simply actuates the key for the new speaker, which immediately changes the voice identification signal on track No. 2 of the tape, opens the circuit to the previously illuminated lamp, and closes the circuit to the lamp of the new speaker.

The control circuit C_c which is illustrated schematically in FIG. 4 comprises the switches S_1, S_2, S_n for the selector keys K_1, K_2, K_n connected through leads 30_a, 30_b and 30_n to conventional oscillators O_1, O_2 and O_n which in turn are connected to the input terminal 12_a of the control unit. The light indicators, L_1, L_2, L_n are connected through leads 42_a, 42_b and 42_n to the switch leads 30_a, 30_b and 30_n respectively and to filters F_1, F_2, F_n through leads 44_a, 44_b and 44_n. The filters F_1, F_2, F_n are supplied through lead **45** with signal from the input transcribing terminal **47** of the control unit.

Consider now the operation of the system in a proceeding where a plurality of voices are being recorded. In this instance, the system is set up as shown in FIG. 1, wherein the lead **30** connects the output terminal **40** of the voice identification control unit to the unit to the input terminal **12***a* of the recorder **10.** The operator places speaker identification tags in the respective brackets or frames **26** corresponding to the different people whose voices are to be recorded in the proceeding. The operator now simply depresses the operating member, such as the key or button K, for the person speaking. Assume that the judge is making opening remarks in a judicial proceeding, in which event the operator depresses the key K_1 for the switch Sw_1. In this instance, the power supply **15** is thereby connected to energize lamp L_1 through the lead **42***a* and to energize oscillator O_1 over a line **30***a*, and to deliver a signal of frequency F_1 to the voice identification head **20** and record it on the track T_i of the tape during the entire time the judge's voice is being recorded on the track T_v of the tape T by the voice recording head **16.** It is noted that during this time the operator has visual means, the lamp L_1, to insure that the proper voice identification signal is being produced on the tape so long as the judge is speaking. Now assume that the judge has completed his remarks and a second speaker, for example Jones, an attorney, begins to speak. In this instance, the operator simply depresses the key K_2 for Jones, which automatically opens the switch Sw_1, turning off lamp L_1 and energizing the lamp L_2. The power to oscillator O_1 is also thereby discontinued, and is applied instead to the oscillator O_2, to deliver to the voice identification head **20** a signal of a different frequency F_2 during the entire time the voice of the new speaker is being recorded on the voice track T_v of the tape.

Consider further the operation of the system and assuming that the voice identification control unit is now set up with the recorder to play back the tape for purposes of making a permanent transcript. In this instance, as shown in FIG. 2, the earphones **60** are connected through lead **62** to the track No. 1 output terminal **64** of the recorder. The other track No. 2 output terminal **66** of the recorder is connected through lead **68** to the input terminal **47** of the voice identification control unit. In this instance the output signals from the voice identification track T_i of the tape T produce an output through a particular one of the respective filters F_1, F_2 and F_n, depending on the frequency of the voice identification signal on the tape, to effect energization of only the lamp which corresponds to the speaker's voice then occurring on the voice track T_v of the tape T. This provides a visual indicator to the

transcriber which is continuous during the entire time for which the voice identification remains the same. Now, when a different speaker speaks, the frequency of the signal on the voice identification track T_i changes, and the filters will automatically discriminate and effect output current to the lamp corresponding to the voice identification signal on the tape, for example an identification signal at F_2 passes through filter F_2 to light lamp L_2.

Another embodiment of the voice control identification unit in accordance with the present invention is illustrated in FIG. 6. In this system the operating member K_1, K_2, K_n for the selector switches S_1, S_2 and S_n are housed in a separate unit 90 and the operating members are arranged in two parallel rows of four and a third row of two, similar to the keys for a stenographic machine. The unit 90 is connected to the control circuit C_c of voice identification control unit through lead 92, the control circuit being similar to that previously described. In this instance, the selector switches are non-latching spring type with no interlocking means and therefore, the operating member must be maintained depressed during the entire time the voices for the respective parties identified by the operating members are being recorded.

FIG. 5 illustrates the typical frequency responses of the filters F_1, F_2 and F_n in the embodiment of FIG. 4 by means of which the different voice identification signals are identified, discriminated, and used to operate a corresponding one of the lamps. Graph A of FIG. 5 is a plot of output voltage E as ordinate against the frequency of a constant-amplitude input signal as abscissa, and shows that filter F_1 has a maximum transmissivity at the frequency F_1 and a narrow pass band outside of which substantially no signal will pass through the filter. At B of FIG. 5 there is shown the corresponding pass band for the filter F_2, which is centered at the frequency F_2 and is narrow enough so that it will not pass to any substantial degree signals of frequencies lying within the pass band shown at A. Similarly, at C of FIG. 5 there is shown a corresponding pass band for the filter F_n, which has a center frequency at the frequency of F_n and a narrow pass band such as not to pass to any substantial degree signals having frequencies in either of the pass bands A or B. Accordingly, as an example, an input voice identification signal at frequency F_1 applied to input terminal 47 in FIG. 4 will pass through filter F_1 and be rejected by the other filters, so that only lamp No. 1 will be illuminated in response to this particular voice identification signal. Similarly, any of the other voice identification signals will pass only through its corresponding filter and illuminate only its corresponding lamp. Since there is a large variety of filter constructions and devices suitable for such purposes and well known in the art, it is unnecessary to illustrate or describe in detail specific circuitry for providing the several mutually exclusive pass bands described above.

While in FIG. 4 the output signals from the filters are shown as directly illuminating the respective lamps, it will be understood that, instead, the outputs of the filters may be utilized to control the supply of heating current to each of the lamps, rather than to supply the heating current itself. For example, each of the lamps may be supplied with operating power from the power line source by way of an electrically controllable switch which is normally open, and is only closed in response to the application to the control element of the switch of a signal from a corresponding filter. Further, if desired, the output of each filter may be detected to produce a DC control voltage for controlling the corresponding electronic switch means to control the supply of current to the corresponding lamp.

While in the embodiments of the invention described hereinbefore the arrangement is such that the operator, during the recording procedure, will hold depressed the particular key or switch corresponding to the given speaker throughout the entire time of speaking so as to produce the continuous identification signal, it will be understood that, instead, a mechanical or electrical latching arrangement may be provided so that, once actuated, a given key or switch remains actuated until some other key is depressed, at which time the first key is automatically released. The latter arrangement then frees the operator from the necessity of holding a key depressed during lengthy recording by a given speaker. In this event, a manually operable clear switch may be provided to release all keys when the apparatus is to be used for transcription, or such clearing may be provided automatically either in response to the setting-up of the equipment in the transcribing mode, or by means of relay circuits responsive to the reception of an identifying voice signal through any of the filters to disconnect all of the lamps from all of the switch means and permit control of the lamps solely in response to voice identification signals.

I claim:

1. In a method for recording voices of a plurality of speakers and for enabling later identification of each voice with the proper corresponding speaker, the steps of:

producing voice signals representative of said voices and recording said voice signals upon a sound storage medium;

producing a plurality of identifiably different voice-identification signals, one for each of said speakers; and

separately recording on said sound storage medium, continuously througout each time one of said voice signals produced by one of said speakers is being recorded, that one of said different voice-identification signals corresponding to the voice then speaking, in a manner to permit electrical separation of said voice-identification signals from said recorded voice signals upon later reproduction of signals on said storage medium, thereby to enable continuous identification of the speaker during reproduction of each voice signal without the interference with the sound of each voice by the voice-identification signals.

2. A method as claimed in claim 1 wherein said recording comprises recording on two different storage tracks, one for said voice signals and one for said voice-identification signals.

3. A method as claimed in claim 1 wherein said recording comprises recording on different storage tracks, at least one for said voice signals and at least one other track for said voice-identification signals.

4. A method as claimed in claim 1 wherein said producing of voice-identification signals comprises producing oscillations in different frequency ranges, each range corresponding to a particular one of said speakers.

5. A method as claimed in claim 1 comprising producing a visual indication of which voice-identification signal is being recorded at any time.

6. A method as claimed in claim 1 comprising reproducing said voice signals and their corresponding voice-identification signals from said storage medium, and discriminating among said reproduced voice-identification signals to produce a visual indication of the identity of the speaker whose voice is being played back.

7. A method as claimed in claim 1 wherein said producing of said voice-identification signals comprises producing oscillations in different frequency ranges, each range corresponding to a particular one of said

speakers, and said method comprising reproducing said voice signals and their corresponding voice-identification signals from said storage medium, and discriminating among said reproduced voice-identification signals to produce a visual indication of the identity of the speaker whose voice is being played back, said discriminating comprising applying said voice identification signals to a plurality of frequency-selective filter means each passing voice-identification signals in only one of said ranges, and producing a different visual display depending upon which of said filter means is passing voice-identification signals.

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