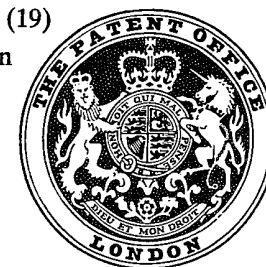


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(54) INFORMATION TRANSMITTING SYSTEM

(71) I, PAUL MANFRED PERSSON, a Swedish Subject, of Flintvagen 20, S-175 61 Jarfalla, Sweden, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:-

In order to study the behaviour of different units, for example certain artillery and guided missile units, tanks, aircraft etc, in a military exercise, there are observers at or aboard the different operative units. The observers report verbally by radio to a central receiving station the events or disposition of forces in the exercise. The reports may relate the discovery of targets, the designation of targets, the occurrence of firing, the fall of shot or like matters. At the central receiving station a separate channel in a recording medium is attributed to each unit; a multi-channel tape recorder may be used for this purpose. A common time-scale is registered in all the channels. When the registration of the time-scale is finished, usually after several successive working periods, the reports may be played back simultaneously, in order, for example, by correlation of separately reported events, to evaluate the exercise.

Owing to the manner of reporting a long time may pass from the occurrence of an event before its significance can be assessed from a collation of all the various reports. The present invention relates to a system which in its preferred embodiment makes reporting, and the collation of reports, more speedy.

The basis of the present invention is the pre-arrangement of the information which is to be transmitted into a limited number of coded messages. It is intended that the messages, which may be in a binary code, be produced, instead of verbal messages, by the various observers with the aid of apparatus supplied with a key set. Each key of the set

represents a predetermined message and, when actuated, generates a special code. The coded information is transmitted via radio preferably via the communication radio transmitter to the receiving station, where it will be registered (stored). The information is now present in such a form that it can directly be subjected to automatic data processing.

The amount of information during a working period, i.e. during a certain continuous course of events, is probably relatively limited, even in an enlarged system, and the processing, at least in a first stage, may be restricted to simple sorting and presentation, for which reason a computer of restricted size (minicomputer) connected on-line may be used.

The system may be realised by using mainly already existing standard units and commercially available components. The code for information transmission may be for example the so-called Teletype (R.T.M) code, which is commonly used in computer connections. The Teletype (R.T.M) code is an extension of the ASCII code, which is standardized (ISO/R 648). The code comprises 64 (i.e. 2⁶) information carrying characters (letters, figures, signs), which gives an outer frame for the key set design. To the information carrying keys there is added an ERASE key, to be used when keying errors are made. Each key may be provided with a built-in lamp, which is lighted, when the key is depressed; otherwise a control display might be arranged on the apparatus, whereby the display shows which keys have been depressed.

The coded information from every depressed key may be transmitted in serial form. The speed of transmission is normally 10 signs/sec, i.e. 110 Baud. The transmission of the binary coded information is transmitted by wireless telegraphy on different wavelengths or frequency channels for the

different observation stations. The modulation is preferably effected by means of a sub-carrier wave.

One embodiment of a system according to the invention will now be described with reference to the accompanying schematic drawing.

At various observation stations there are coders $k_1, k_2, \dots, k_n$ respectively. Each coder has a set of coding keys, each key denoting one of the different events which may occur. Each coder has an ERASE key. Each coder is connected to a modulator $m_1, m_2, \dots, m_n$ respectively. The coded message which is keyed may be converted into a coded group of bursts of tone frequencies, for example 1000 and 1100 Hz, by the respective modulator. The signals thereby produced are conducted to a respective one of the transmitters $s_1, s_2, \dots, s_n$, each of which is situated at the respective observation station. The transmitters radiate signals at respective different carrier frequencies $f_1, f_2, \dots, f_n$ to the remote "central" station.

The signals sent by the transmitters are received by appropriately tuned receivers $M_1, M_2, \dots, M_n$ each of which is connected to demodulator $d_1, d_2, \dots, d_n$ respectively. The demodulations are adapted in an "interface" $g_1, g_2, \dots, g_n$ for registration in a computer memory DM and, if it be desired, for feeding into a microprocessor MP or any other computer D, so that they may be produced later together with other observations in an assembled transcript or display U. A common timing is also added here with the aid of a clock signal generator T.

Immediately before the computer D and the display U there is connected an interface G_1, G_2 respectively in order to readapt the code signals into serial form, which is more suitable for feeding to the respective device. To the common interface B, usually called "bus", is connected a programme memory PM which as necessary provides instructions to the microprocessor or computer to control the display of the assembled information and its format.

The microprocessor MP is connected to a time transmitter TG, which activates the processor during operation.

WHAT I CLAIM IS:

1. A system for transmission of information from several observation stations to a central station, in which system each observation station is equipped with a coder which includes a set of keys of which each on actuation generates a respective predetermined coded message and a code transmitter which transmits the coded messages via a respective channel of wireless telegraphy to the central station, the carrier frequency of all the channels being different, and the central station is arranged to store the various messages with an added common timing with the aid of a

clock signal generator so that they may be produced later together with other observations in an assembled transcript or display.

2. A system according to claim 1, in which the coder is adapted to display the coded message or an indication thereof which is produced by actuation of any key in the set.

3. A system according to claim 1 or 2, in which a modulator is connected between the coder and the transmitter at each observation station for producing the coded message in the form of modulation of two tone frequencies.

4. A system substantially as hereinbefore described with reference to the accompanying drawing.

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