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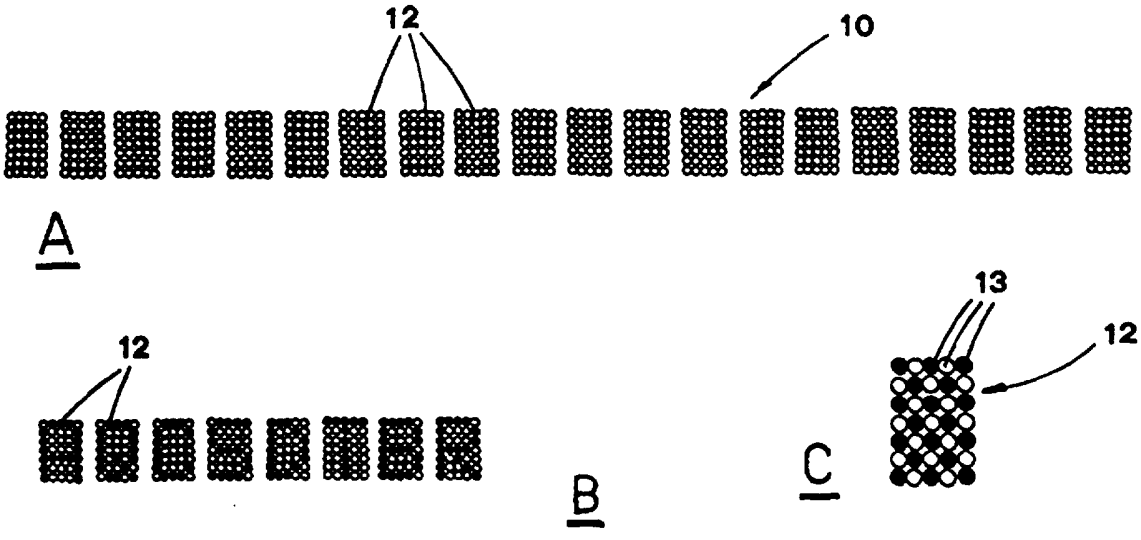

(57) Abstract

The present invention relates to a system for producing and communicating subliminal visual (optical) messages, in such a way that these messages may effectively influence the behaviour of the individuals. The invention concerns also a device suited to produce these messages in such a way that they can be easily used as effective instruments while putting a therapeutic treatment into practice. In particular, the present invention concerns a system and devices that allow to create logically structured visual messages, namely messages composed of many words.

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SYSTEM AND DEVICE FOR PRODUCING AND TRANSMITTING SUBLIMINAL MESSAGES

TECHNICAL FIELD

A subliminal message is a message that can be perceived below the consciousness threshold, therefore too weak to be recognised consciously, but not without effects, since it is perceived at a subconscious level.

Research performed by various scientists during the last 40 years has demonstrated that subliminal messages exchanged subconsciously by people when they meet affect their behaviour and therefore are perceived.

However, subliminal messages produced in laboratory by means of various artifices, which can be called artificial messages, have given results which are either negative or uncertain and cannot be considered reliable results, with reference to their capability of affecting the behaviour. In fact, that research has not led to any practical application in the fields where these messages could be very useful, as e.g. in behaviour disorders treatment.

The application of subliminal messages, namely messages that can influence behaviour, could be several.

Indeed, it could be possible to control stress, improve sleeping quality, reduce anxiety effects, offer valid support in treatment of depression and behaviour disorders in general, and so on.

DESCRIPTION OF THE PRIOR ART

The subject of the present invention related to the characteristics and technical ways of producing effective subliminal messages and the relative devices, offers an instrument that can be used for transmitting to patients subliminal messages which the therapists believes to be useful for stimulation of desired positive behaviour.

CONFIRMATION COPY

Obviously, it is the therapist who prepares words which compose the message, and therefore its logical contents.

As far as natural messages are concerned, reliable experimental research, carried out with high-speed film recording, has been performed.

It appeared that a considerable part of communication between individuals was executed by means of gesture messages (e.g. face, mouth, eyes expressions) which were so short that the interlocutors were not aware of them.

However, a very important thing has been stated, that is when these subliminal messages were in conflict with conscious messages, communicated verbally and by gestures, the subsequent behaviour was coherent with the subliminal messages meaning.

This research confirms what has been already stated before, i.e. that "natural" subliminal messages are perceived and affect behaviour.

All the same, as has been already said, studies and research on effects of "artificial" subliminal messages, produced by various techniques, have resulted either negative or doubtful, and therefore, unreliable.

A broad interest was generated in the fifties by James Vicary, an experienced market researcher, who announced that he had presented subliminal messages in a cinema in New Jersey, by projecting the words DRINK COCA put between the film photograms for 1/300 second.

He declared that the consumption of this product had considerably increased.

However, in 1962, the same J. Vicary admitted that the fact had not been quite in this way.

Anyway, the experiment was actually carried out in the eighties in strictly controlled conditions and no effect was discovered.

Serious research on the possibility of affecting human behaviour by visual subliminal messages has used principally two methods of producing these messages.

According to one method, a suitable device projects, for very short periods of time (about 4 ms), a message composed of words and possibly drawings,

interposed between or superimposed on photograms.

According to the other method, a suitable optical apparatus presents a message in such a way that one eye receives a message while the other receives a graphic image which, superimposing on the vision of the message in mind, makes it difficult to be decoded in a short time e.g. in about 1/5 second (dichoptic method with a masking image).

According to the inventor of the present invention, the substantially negative results obtained by these two methods derive from technical characteristics of the messages.

In fact, according to the inventor, it is a big methodological error to affirm that when a message (which is projected in a context of images which become continuous due to persistence on the retina, or seen together with images constructed in such a way that a certain period of time is required for decoding a word or words) is displayed for a period of time so short that it is not perceived consciously, it becomes *"ipso facto"* a subliminal message and therefore it is perceived subconsciously.

It is more probable that such a message is perceived neither consciously nor subconsciously, if not casually.

In fact, conscious perceiving of the first type of message does not depend on the fact that it is displayed for a short period of time.

The inventor has performed a test which can be easily repeated.

A visual message composed of eight letters has been displayed for a few milliseconds and it has appeared that the message is perceived consciously when the contrast with the image constituting the background is good, due to the image persistence on the retina, provided that the eye already fixes the area where the message should appear.

At this point another error of some researchers becomes evident.

In fact, human eye can see clear and sharp only within a very small angle and only rapid movements of the eyeball can give an impression that a big part of visual field is seen clearly at the same time.

However, in order to catch images, perceived either consciously and even

more subconsciously, which are projected rapidly on a screen, the eye must be fixed on a limited part of the screen, on which the message will appear.

Coming back to the problem of the contrast between the image constituting the background and the message, the inventor has pointed out by means of the simple experiment previously described that if these messages, projected, interposed between frames, by suitable devices, are not perceived consciously, this does not depend only on shorter or longer exposure time, but actually on the combined result of more parameters, i.e. exposure time and contrast, without forgetting that the contrast is affected also by the lighting of the room with respect to the lighting of the screen.

The contrast concerns the difference of luminance and/or colour.

But there is another parameter not to be forgotten, that is the capability of the image, perceived simultaneously, of confusing graphically, in some way of, more or less, masking the message.

Therefore, the second type of message (dichoptic) is scientifically more correct, because during the fusion of the two images, the confusion degree is as desired and not casual like in the case of projection of messages in the context of images.

However, it is to be pointed out that also with this kind of message, the perception capability, i.e. the period of time necessary to perceive, consciously and therefore, supposedly also subconsciously, the masked words constituting the message, is subjective.

The researchers have taken into consideration this fact, but have neglected that the above mentioned perception capability is not always the same even for the same subject, but changes from trial to trial, depending on these particulars of the image that attract immediately the perceiving attention.

According to the results of the research, in which dichoptic messages have been used, published in 1995 and conducted by A.G. Greenwald, M.R. Klinger of Washington University and Alabama University, respectively, the dichoptic methodology, although used since 1983 in research on the effects of the subliminal messages on the behaviour, does not supply the basis for a sufficient model of subliminal activation, and anyway, no effects on the

behaviour have been noted.

Some elements appear from the inventor's critics to the characteristics of subliminal messages used in various researches : a visual message composed of some words is not necessarily subliminal only because it has been presented for a short period of time so that it has not been perceived consciously in a context of contrasts and confusion with graphics of masking background image, perceived simultaneously.

It might not be perceived subconsciously, or perceived only casually, from time to time, so weakly as not to affect behaviour, but at the most have a slight semantic effect (recognition within an error margin inferior to the probable one, e.g. if the message contains "good" or "bad" words).

SUMMARY OF THE INVENTION

Based on the determination of the characteristics that a subliminal message should possess to surely affect behaviour, the object of the present invention is to conceive a system and create a device that make it possible to produce and communicate a message with these characteristics.

On the other side, the inventor has pointed out that there is not only one subliminal message, but a range of subliminal messages characterised by a group of parameters that change their features.

This happens by changing the message duration, luminance intensity, contrast with possible background images, etc.

The above mentioned objects are obtained by a system and device described in the claims.

The characteristics of the invention, not resulting from what has already been said, will be pointed out in the following, with reference to the enclosed drawing tables, in which:

- figs. 1a, b, and c show an embodiment of a display used in the devices being the subject of the present invention;

- figs. 2 and 3 show block diagrams of two possible configurations of the devices being the subject of the present invention.

BEST MODES OF CARRYING OUT THE INVENTION

Critical analysis of what has been done by researchers to produce subliminal messages, analysis of factors that have determined failure of behaviour affecting, analysis of aforementioned natural subliminal messages, study of the eye and visual perception physiology have brought the inventor to the conclusion that the principal obstacle to producing effective visual subliminal messages derives from the fact that in order to present written words on a display or a screen it is necessary to superimpose and/or use sequence of images.

Whereas e.g. in the "natural" message, the passage from a "good" look to a "bad" one and again to a "good" one occurs by continuous expression changes due to facial muscles movement.

The superimposition of images should be rejected if carried out to mask, namely that effect of graphic confusion, making its decoding not immediate, either if this hiding effect is obtained by suitably studied or casual images.

For the reasons explained above, it is not sure that the message is perceived and anyway, even if and when perceived, it is "weak" and does not affect behaviour.

The sequence of images with possible non-masking superimposition causes a presentation of these images with an obvious discontinuity between one another.

From the other side, there are not other possibilities, technically easy to apply.

Therefore, it became necessary to take note of the problem and find out solutions that allow to create effective artificial visual subliminal messages in spite of these limits.

The inventor has proceeded in three steps.

Bearing in mind that all these limits, the eye and visual perception physiology together with requirements deriving from the use of messages during therapeutic treatments, the inventor has first of all specified the technical characteristics of a valid subliminal message, i.e. a message that is always perceivable and "strong" enough to affect behaviour.

Then, the inventor has created a system for producing sequences of images featuring these characteristics and finally, the devices that carry out this system.

Therefore: 1st - characteristics, 2nd - system or method for realisation of messages with these characteristics, 3rd - devices, the last two points being strictly interconnected with the first one and constituting the substantial basis of the present invention.

TECHNICAL CHARACTERISTICS

1) Since, as it has already been stated, a human eye can see clear and sharp only within a very small angle and only rapid movements of the eyeball make it possible to see a bigger part of visual field clearly at the same time, the limited area where the message will appear must be well defined for the same message to be seen clearly.

Therefore, in order to receive the message, composed of some letters, possibly with other graphic signs, the eye must be already focused on the area where they are to appear, so this area must be well defined.

Further, the dimensions of the message must be small, otherwise, because of short exposure time, not all of the message would be seen, even if subconsciously.

Moreover, the message must not be composed of more than about ten alphabetical characters, otherwise, as it has been tested, it is difficult to perceive perfectly.

An example of a message perceived well is a message composed of about ten letters, about 10 mm high and exposed on a display situated about 30 - 40

cm from the observer's head.

It is to be recalled that known words generally are not read entirely, but only some letters and/or groups of letters are read, facilitating rapid perception.

2) In order to be certainly perceived each time, a visual subliminal message composed of written words must be exposed for a determined period of time and with a good contrast of light and/or colour with a possible image constituting the background.

The contrast must prevent, at least for a certain desired time, any masking effect of the background graphic (masking does not mean covering or deleting the message, but making it difficult to decode immediately).

This is to avoid that the visual message may require time to be decoded, time which, as already said, would depend on the subject and, accidentally changes also from one moment to another for the same subject.

3) The time of clear presentation of the message must be as long as possible, better if at the limit of the conscious perception, because according to the theory, formulated and verified by the inventor, the longer is perception, even subconscious, of the message, the bigger is the power of this "strong" perception to affect behaviour.

Obviously, since the message must not be perceived consciously, it must not exceed the aforementioned time limit, and therefore, not only must its presentation be stopped within this time limit, but also its perception due to image persistence in the eye retina must be removed.

4) The message visibility must not be considerably affected by the room lighting, which is changeable, except for precautions that could make uneasy the treatments with subliminal messages.

5) These messages must be easy to prepare and use.

In other words, they must be prepared easily and in a short time and be composed of words fulfilling the needs of the subject and easily used by him, almost always, also at home.

6) It must be possible to have at one's disposal not only one visual message, but a sequence of time-spaced messages, each composed of one or more

words in such a way that a total, logically structured message is obtained, which can be perceived and can affect behaviour in the desired way.

It is important that the time left between one part of the message and the subsequent one is long enough to allow subconscious processing of the logical connections between the different parts (words) constituting the whole message.

The best interval has occurred to be included between 0,4 and 2 seconds.

Advantageously, the whole message is to be repeated several dozens of times

7) It is essential for an application that lasts even ten minutes that these messages do not disturb or considerably tire the sight.

SYSTEM FOR REALISATION OF MESSAGES WITH THESE CHARACTERISTICS

In order to possess these characteristics, the subliminal messages can be realised in the following way in time sequences.

First step: in a graphically well delimited area of the screen or display (point 1 of the technical characteristics), appears a first image.

The medium value of this image luminance with respect to the following message luminance is such as not to disturb the observer's sight (point 7 of the technical characteristics).

This first image is not absolutely necessary and could be replaced with a no-image step (dark phase), but an intense flickering could provoke a considerable and difficult to bear sight annoyance and tiredness to the observer who must be subjected to this treatment for several minutes.

Second step: at a certain moment, the above mentioned image is replaced with the message, which can be superimposed on a possible background image, provided that it does not have masking effect, at least for a desired time.

Third step: a bit before (approximately five - ten milliseconds) the message can be perceived consciously, the image of the message is replaced with a graphic image, an example of which is given later, aimed at removing the consequences of the message image persistence on the retina, therefore at cutting off further perception of the same message.

After a short break the last image is replaced with the first one, described in the first step, and the whole cycle repeats with the second message and so on until the whole desired message is presented.

Afterwards, the cycle starts again and is repeated for a necessary number of times (point 8 of technical characteristics).

If a suitable graphic image is found out, as in a non limitative example given later, the image that appears in the first step and the image that appears in the third step can correspond, possibly weakening the luminance intensity before the message presentation.

Now let us see how the above described sequence is perceived by the observer's eye.

For example, a first image appears for half a second and the observer perceives it consciously.

In the second step, this image is replaced with the message.

In the visual perception, the message is immediately superimposed on the image presented in the first step, persisting in the eye retina.

As the intensity of the first image persistence on the retina weakens, the message is clearly and gently perceived (point 2 of the technical characteristics).

In order to keep the perception subliminal, this step must be interrupted by the image of the third step, a bit before that the perception becomes conscious.

When the image of the third step appears, the observer stops immediately perceiving of the subliminal message.

In fact, together with the persistence of the image of the message on the eye retina, the new image appears in its whole intensity, this new image being prepared in such a way that summed up with the precedent one makes it

impossible to further perceive the subliminal message.

This way, it is certain that the subliminal message is presented for a period very near to the maximum possible time. In fact some milliseconds of exposure more would cause conscious perception (point 3 of technical characteristics).

Obviously, also a shorter period of exposure would be effective but the results would not be so active.

The graphic of the last image, aimed at avoiding further perception of the message due to the persistence on the retina, can be different, but it is important that summing up with the message image, it is not possible to decode the letters composing the words and therefore the message.

APPARATUSES

These subliminal messages could be obtained by two or three slide projectors equipped with synchronised shutters.

To present a logically structured message, composed of more images following one another at suitable intervals, it would be necessary to use synchronised automatic mechanisms to change slides.

All this would be very complicated and delicate from the mechanical point of view, and also very expensive, but first of all it would not be easy to prepare necessary messages and therefore, would not agree with point 5 of the above mentioned technical characteristics.

Anyway, even in this way, giving up the practicality and using known means, it is possible to produce an apparatus suited for realisation of subliminal messages with the indispensable characteristics given by the present invention.

It is more convenient to use electronic equipment, in which a microprocessor allows to present, on a suitable display, messages and images, memorised in sequences and for programmed periods of time, and featuring also other wanted characteristics.

At this point the problem of displays emerges.

Cathode-ray tubes offer a vast graphic possibility, but are not recommended because of the phosphor luminance persistence (also liquid crystal displays are not recommended due to their switching slowness).

Since this luminance persistence decreases in time, the moment in which the eye does no longer see the image, depends on the room's lighting.

Moreover, in order to regulate the message length, it is necessary to change the video display frequency, which leads to relative stability problems.

It is also possible to obtain subliminal messages as described above using a videorecorder connected to a monitor or to a TV-set.

However, in this case the length of the subliminal message would be fixed and not programmable, and therefore the result would not be the best.

Moreover, it would be impossible for a technician in the field, e.g. a therapist, to prepare single tapes relative to each case.

Likewise, also in this case, the drawbacks of display constituted by a cathode-ray tube remain.

For instance, a film could be used, composed of a sequence of photograms, some of which contain words that form the message.

The precedent and following photograms contain the images of the described above steps 1 and 3.

Nevertheless, it is possible to use a cathode-ray tube display (as well as a liquid crystal display), but even if first prototypes have been produced with this component, according to the author, it is much more preferable to use LED (light emitting diode) displays, which do not feature the disadvantages of the cathode-ray tube display.

The luminance of LED displays, comprising luminous elements of rapid commutation, is very high and therefore the room's lighting influence can be practically ignored. (This fulfils the requirements of point 2 of the technical characteristics).

Moreover, all the LED's constituting the display switch on and off practically

instantaneously.

With reference to figs. 1a, b, and c, these displays comprise strings made up of a certain number of rectangles 12, arranged either side by side or anyway, near to each other, each of which destined to keep one letter or another graphic sign (alphanumeric displays).

Each rectangle is formed by a certain number of LED's 13 (fig. 1c), which are sufficient, after the required LED's have been activated, for creating, with points, any necessary letter or another graphic sign, which can be read without any difficulty.

It is important to point out that, since the words constituting the message are made of letters, which in their turn, are formed by separate points, it is much easier to create a graphic image aimed at immediate cancellation of the letters perception due to the persistence on the retina.

In this connection, it has appeared to be particularly useful to have possibility of removing the consequences of the message words persistence on the retina with an image, in which the luminous points, constituting the LED's, are activated alternatively.

It would be much more difficult, if the letters were formed by a continuous luminous line.

Also in his first tests, in which cathodic-ray tubes were used as displays, the author has used characters made of many small points (asterisk-like) near to each other, but separate, and for the image aimed at removing the consequences of the image persistence on the retina, a raster formed by on-off asterisks, has been used.

An indicative, but not limitative example of the devices with which the author has performed many experiments, is a LED display of the NEC (Nipponic Electronic Company), model FC20X1SA-AB, constituted by a string 10 of twenty rectangular areas 12, each for one alphanumeric character, and each made of thirty five diodes 13 emitting a light round dot, of about 1 mm diameter, arranged in seven lines of five elements each (figure 1a).

It is to be pointed out that in figure 1, the switched on diodes of each matrix have been represented by small black full circles, whereas the deactivated

diodes are shown by empty circles.

On such a display, it is possible to form letters like these shown in figure 1b.

This type of display allows to obtain the image of figure 1c by keeping alternatively one diode switched on and one off.

This image has appeared to be best for cancelling the effect of the persistence of the passage from the above mentioned step 2 to step 3, for any letter of the alphabet.

Apart from the kind of display used, it is preferable that the letters constituting the message parts are formed of points, near to each other but separate and distinct, which can be of different shapes - round, square, asterisk-like, etc.

This way it is easier to realise an image formed by elements which are subsequently changed to an alternate on and off configuration, and which allows to remove the persistence of the word or words constituting the message parts on the retina.

The same image can be used in step 1 as background image, possibly reducing its luminance intensity a bit before the step 3 finishes, that is a bit before presenting the message.

In fact, in this case, as soon as this background image is switched off during the passage from step 3 to step 2 and more or less simultaneously the message letters appear in all their luminance intensity, they are not immediately perceived violently due to the background image persistence on the retina.

However, as has already been said, as the intensity of the image persisting on the retina gets weaker, the message appears gently.

EXAMPLES OF DEVICES

Whereas the invention derives from a group of characteristics, some indispensable other optional but useful, which the visual subliminal message must have in order to be effective and whereas together with the carrying out of aforesaid characteristics with graphic images presented in sequence, make up the main subject of the invention, independently of all the various possible

devices with which this aim can be reached; the devices, which are considered by the inventor as being ideal as they not only correspond to the indispensable needs but also to those useful characteristics presented in the description of the invention, are described herein.

Consequently, these devices will be subject of claims.

First device - personal unit for the subject.

As shown in the block diagram of figure 2, it includes:

power supply line filter 15 to avoid interferences, a power supply device 16 which supplies the necessary voltage and power, a CPU 17 equipped with a microprocessor, an EPROM memory 18 containing the program and a RAM memory 19, powered by batteries, or anyway a memory (EEPROM type) which can be re-written, or an insertable memory card, in which the therapist introduces a necessary message by the apparatus MASTER, through the serial port.

A LED display 20, featuring all the characteristics and advantages described before, is preferably connected to the CPU 17. Also a serial connector 21 links the CPU to the MASTER device for the message transfer.

A recharging accumulator power supply can be also provided, particularly useful for subjects who must take the apparatus with them, in special types of treatment.

MASTER unit for the therapist's use.

In the block diagram of figure 3, this unit is formed in part like the personal unit, i.e. includes a power line filter 25, a power supply device 26, a CPU 27, a display 30, but it features also a serial output 31 with an echo and a keyboard 32 for creating messages and fixing some characteristics (luminance, intervals, etc.).

This unit can be used for treatments performed in stable centres, but can also be used for composing and transmitting messages, which the subject must have for treatment outside, to personal units through the serial port.

For convenience's sake, several dozen of messages can be memorised in the RAM memory 29 of these MASTER units.

The program loaded in the EPROM memory 18, 28 in both devices allows to read the message contained in the RAM memory, then to show the parts of the message on the display with programmed time intervals, luminance intensity and length, then, after the message has been presented, to display the image used to remove the persistence on the retina, and if necessary, to weaken its luminosity before displaying the next part of the message, or replace it with other images, if programmed.

Moreover, the program allows to repeat the message for all the pre-determined number of times.

According to this program, the word or words constituting each part of the message appear always centred on the display, complying with the technical characteristics of the point 1.

Moreover, according to the program, the number of luminous elements activated during the exposure of each of the partial massages constituting the whole message does not change and coincides with the number of luminous elements corresponding at least to the longest word of the message, and in case of shorter words, the luminous elements not involved in the message are activated to supply the images of the first or the third step.

The EPROM memory of the professional device (MASTER) has also memorised therein a program for:

1. Accepting the introduction of messages from the keyboard (text duration intervals, etc.)

2. Storing of these messages

3. Downloading any of the stored messages to a personal unit

4. Verifying if the transmitted message has been perfectly stored.

The inventor has performed many experiments with this apparatus in a systematic way, while using the first prototypes the experiments were generally limited to information on the effectiveness of these subliminal messages in order to improve them.

DESCRIPTION OF THE PERFORMED EXPERIMENTS

There are two different types of experiments performed or co-ordinated by the inventor.

The first type includes tests for verifying the effectiveness of the subliminal messages, and for improving their parameters.

The other type concerns tests performed with subliminal messages complying with the setup characteristics and presentation modes and related to single individuals as well as to groups of individuals of significant number.

Some of these experiments are described, because they show that the subliminal messages featuring the presented characteristics can affect behaviour.

Experiment concerning insomnia

After many orientating trials, this message has been chosen, composed of eight words (partial messages), displayed one at a time, in this sequence:

Calm

Sleep

Sleep

Well

All

Night

Serene

Trust

The message featuring the characteristics defined in the invention, has been programmed on some devices like the ones described above.

An interval between words was established for about a second. The subliminal message and cancelling image feature the technical characteristics of the subliminal message and cancelling image, etc., according to the technical characteristics of the present invention.

This treatment was applied to sixteen persons, suffering either from one insomnia type, in which it is difficult to fall asleep, or from another insomnia type, which causes the patient to wake up in the middle of the night and consequently it is impossible for the patient to fall asleep again.

The treatment was performed at the moment of going to bed for about ten minutes and gave good effects with the first applications in all the cases.

The patients slept well and normally.

If the treatment is interrupted, the beneficial effect disappears generally immediately or, more often, after two or three days.

The result could derive from three causes:

1. The subliminal message is received and affects the behaviour;

2. "Placebo" effect

3. Light hypnosis due to watching for ten minutes a screen with very light flickering of regular rhythm.

The second hypothesis is to be rejected, because with other messages or anyway neutral messages, the subject did not gain the beneficial effect.

The hypnotic effect is to be rejected, because the inventor has exposed subjects to any message for about thirty minutes and the heartbeat measured with a hectograph remained unchanged.

If even a very light hypnotic state had occurred, the heartbeat frequency would have been diminished.

This is confirmed also by other experiments performed by various scientists in electroencephalography, stimulating patients with rhythmical flashes.

Therefore, this research has pointed out that the subliminal messages featuring characteristics stated in the present invention affect behaviour.

S.D. case - last exam

During preparations to the last exam, a final year student suffers from anxiety with feelings of inadequacy and incapability of remembering what she is studying, and this state makes her want to abandon the study.

No valid effect is obtained with tranquillisers prescribed by the doctor.

Although with some scepticism, S.D. agrees to undergo the treatment with subliminal messages.

The message prepared with the help of an expert is composed of two parts presented in sequence:

YOU

CAN DO

SELF

CONFIDENCE

The results are seen just on the first days, S.D. begins to study again, with difficulty but effectively enough.

After four or five days the situation becomes stable without further improvements but without regresses, either, so the message is replaced with the following one:

YOU

DESERVE

DEGREE

After two applications, S.D. has stopped using the message, because it provoked considerable anxiety, which could derive from the fact that this

message touched deep psychological balance.

All the same, it contradicts a possible hypothesis of "placebo" effect.

The first message has been restored and S.D. came back to the state obtained with the first applications.

She has passed the exam and taken a degree.

CLAIMS

1. System of producing and transmitting subliminal messages, characterised in that it includes in time sequence:

- a first step, in which in a graphically well defined area of the screen or display appears a first image, whose medium luminance value with respect to the following message luminance is such as not to disturb the observer's sight;

- second step, in which the above mentioned image is replaced with the message;

- third step, started a bit before the message can be perceived consciously, in which the image of the message is replaced with a graphic image, aimed at making the consequences of the message image persistence on the retina void of effect, and therefore prevents further perception of the same message.

2. System according to claim 1, characterised in that by suspending the message perception at almost conscious perception threshold, it is possible to display it for a maximum exposure time, with consequent improvement of its efficiency.

3. System, according to claim 1, characterised in that after the third step the removal graphic image is replaced with the first one, described in the first step, and the whole cycle repeats with the second message and so on until the whole desired message is displayed.

4. System, according to claim 3, characterised in that the intervals between exposure of different parts of the whole message are comprised between 0,4 and 2 seconds in order to allow as correct and complete as possible perception of the logic of the whole message.

5. System, according to claim 1, characterised in that the graphic of the third step image, aimed at avoiding further perception of the message due to the persistence on the retina, can be different, but summed up with the message image, it makes it impossible to decode the letters composing the words and therefore the message.

6. System according to claim 3 or claim 4, characterised in that said cycle is restarted and repeats itself several dozens of times.

7. System according to claim 3 or claim 4 or 6, characterised in that the length, expressed in number of letters, of each partial message composing the whole message must be the same and coincide at least with the length of the longest message, replacing the empty areas of the shorter partial messages with images of the first of the third step in order to avoid annoying flickering.

8. System, according to claim 1, characterised in that the image appearing in the first step coincides with the image of the third step.

9. System, according to claim 8, characterised in that the luminance intensity of the first step, coinciding with the third step, is decreased before the second step begins.

10. System, according to claim 1, characterised in that in said second step, the message is superimposed on a background image without masking effect, at least for a predetermined time.

11. Device for producing and transmitting subliminal messages, characterised in that it includes

a display (20,30) comprising one or more strings (10) made up of a pre-

establlished number of rectangles (12) arranged side by side and each of which destined to keep one letter or another graphic sign and including a matrix of luminous on/off quick switching elements (13), and means for controlling said display (20,30).

12. Device, according to claim 11, characterised in that said means for controlling said display (20) include:

- a power line filter (15) to avoid interferences;
- a power supply circuit (16) which supplies the necessary voltage and power;
- a CPU (17) equipped with a microprocessor;
- an EPROM memory (18) containing the program and a RAM memory (19) aimed at containing the necessary message.

13. Device, according to claim 11, characterised in that said means for controlling said display (20) include:

- a power line filter (15) to avoid interferences;
- a power supply circuit (16) which supplies the necessary voltage and power;
- a CPU (17) equipped with a microprocessor;
- an EPROM memory (18) containing the program and a memory (EEPROM type) which can be re-written, or an insertable memory card.

14. Device, according to claim 12, characterised in that it includes also a serial port (21).

15. Device, according to claim 11, characterised in that said control means for said display (30) include:

- a power line filter (25) to avoid interferences;
- a power supply circuit (26) which supplies the necessary voltage and power;

- a CPU (27) equipped with a microprocessor;

- an EPROM memory (28) containing the program and a RAM memory (29) aimed at containing the necessary message;

- a serial port (31) with echo output and a keyboard for making up the messages and adjust some of their characteristics.

16. Device, according to claim 11, characterised in that said luminous on/off quick switching elements (13) include a plurality of LED's.

17. Device, according to claim 16, characterised in that the use of the luminous elements LED's allows to use the same device independently from the room lighting.

18. Device, according to claim 11, characterised in that the letters, forming parts of the message, are graphically made up by points, near to each other but separate and distinct, having different shapes for facilitating the creation of an image also made up of elements which are changed simultaneously to a configuration, in which they are alternatively set on and off, so as to remove the effects of the message words persistence on the retina and therefore to prevent further message perception.

19. Device, according to claim 16, characterised in that the making the effects of the message image persistence on the retina void of effect, obtained by said LED's is realised by alternate activation of the single luminous dots, making up the display, i.e. by setting one dots on and the adjacent one off.

20. Device, according to claim 11, characterised in that these luminous elements include matrices of separate dots which can form letters, in case of a message, or images during the step in which the effects of the message image persistence on the retina are made void.

21. Device, according to claim 11, characterised in that the number of luminous elements activated during exposure of each part composing the whole message must be the same and coincide with the number of luminous elements corresponding to at least the longest message part, and when shorter parts of messages are displayed, the luminous elements which are not concerned by the message are activated to show images from the first or third steps.

22. Device, according to claim 11, characterised in that the word making up the message on said luminous elements must always be horizontally centred with respect to the total extension of the display (20,30).

23. Device for producing and transmitting subliminal messages, characterised in that these messages are reproduced on a liquid crystal display.

24. Device for producing and transmitting subliminal messages, characterised in that these messages are reproduced on a cathode-ray display.

25. Device for producing and transmitting subliminal messages, characterised in that these messages are reproduced on photograms which form a film, or on a videotape.

AMENDED CLAIMS

[received by the International Bureau on 01 October 1997 (01.10.1997);
original claims 1 and 4 amended;
remaining claims unchanged (1 page)]

1. System of producing and transmitting subliminal visual messages, characterised in that a succession of images formed by close, distinct, luminous elements appear in a graphically well defined area of a display in the following order:

- in a first step, a first image is displayed with a medium luminance value with respect to the following images is such as not to disturb the observer's sight;

- in a second step, the above mentioned image is replaced with the image of a message;

- in a third step, started a bit before the message can be perceived consciously, the image of the message is replaced with a graphic image, aimed at removing the consequences of the message image persistence on the retina, and therefore prevents further perception of the same message.

2. System according to claim 1, characterised in that by suspending the message perception at almost conscious perception threshold, it is possible to display it for a maximum exposure time, with consequent improvement of its efficiency.

3. System, according to claim 1, characterised in that after the third step the removal graphic image is replaced with the first one, described in the first step, and the whole cycle repeats with the second message and so on until the whole desired message is displayed.

4. System, according to claim 3, characterised in that the intervals between exposure of different parts of the whole message are comprised between 0,4 and 2 seconds in order to allow as correct as possible perception of the whole message logic.

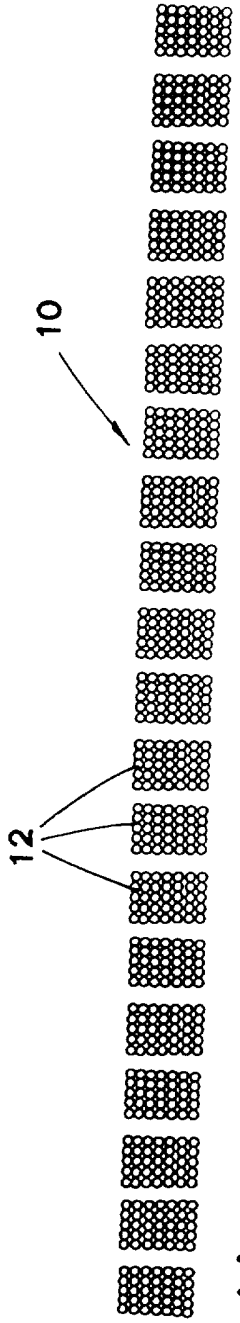

FIG.1A

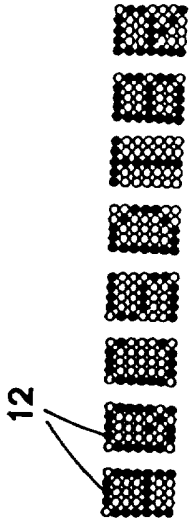

FIG.1B

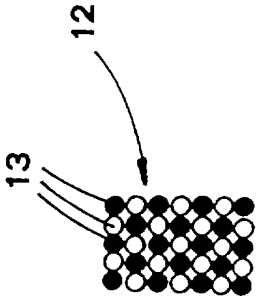

FIG.1C

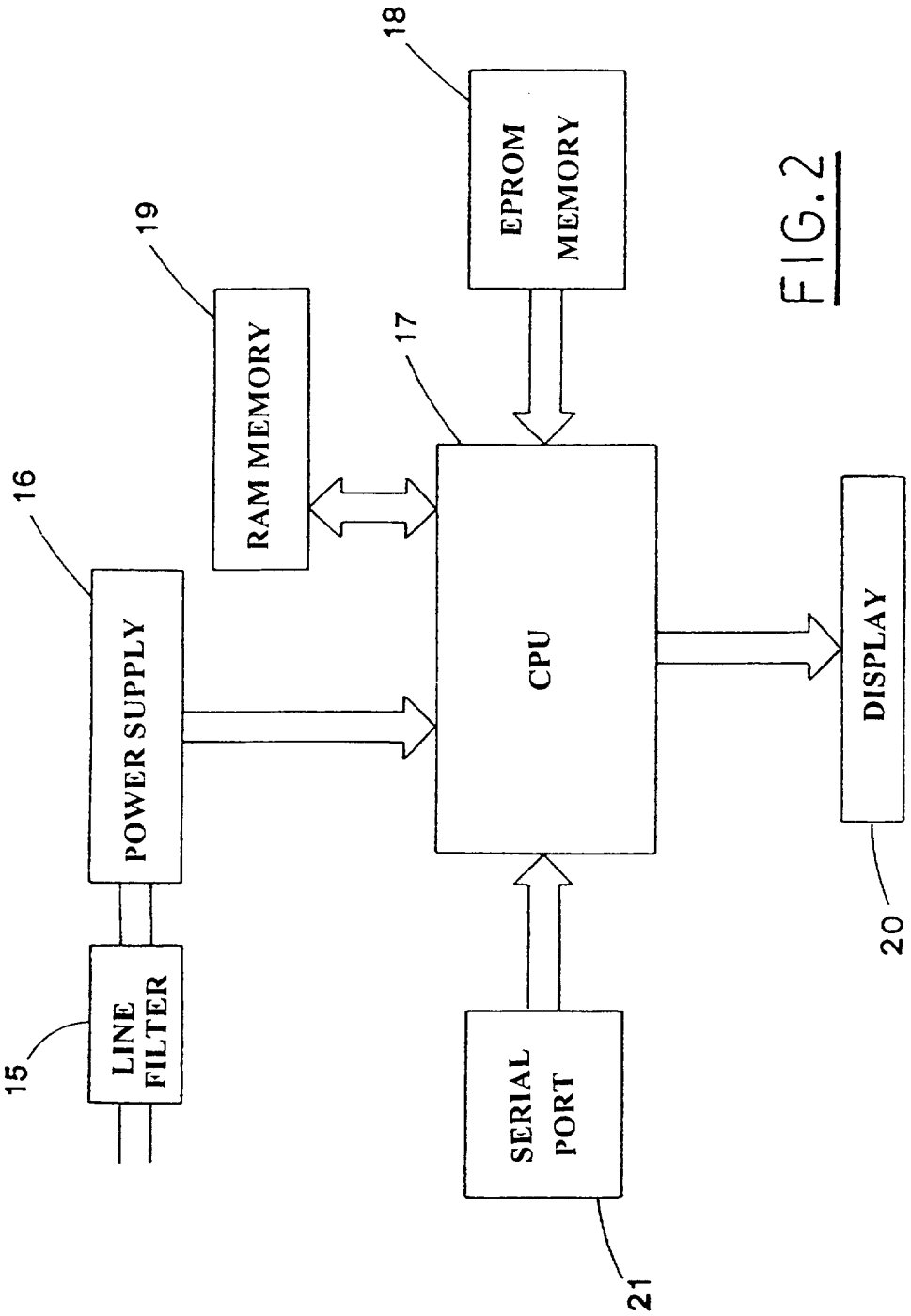
18
EPROM MEMORY
19
RAM MEMORY
17
16
POWER SUPPLY
CPU
DISPLAY
15
LINE FILTER
SERIAL PORT
20
21

FIG.2

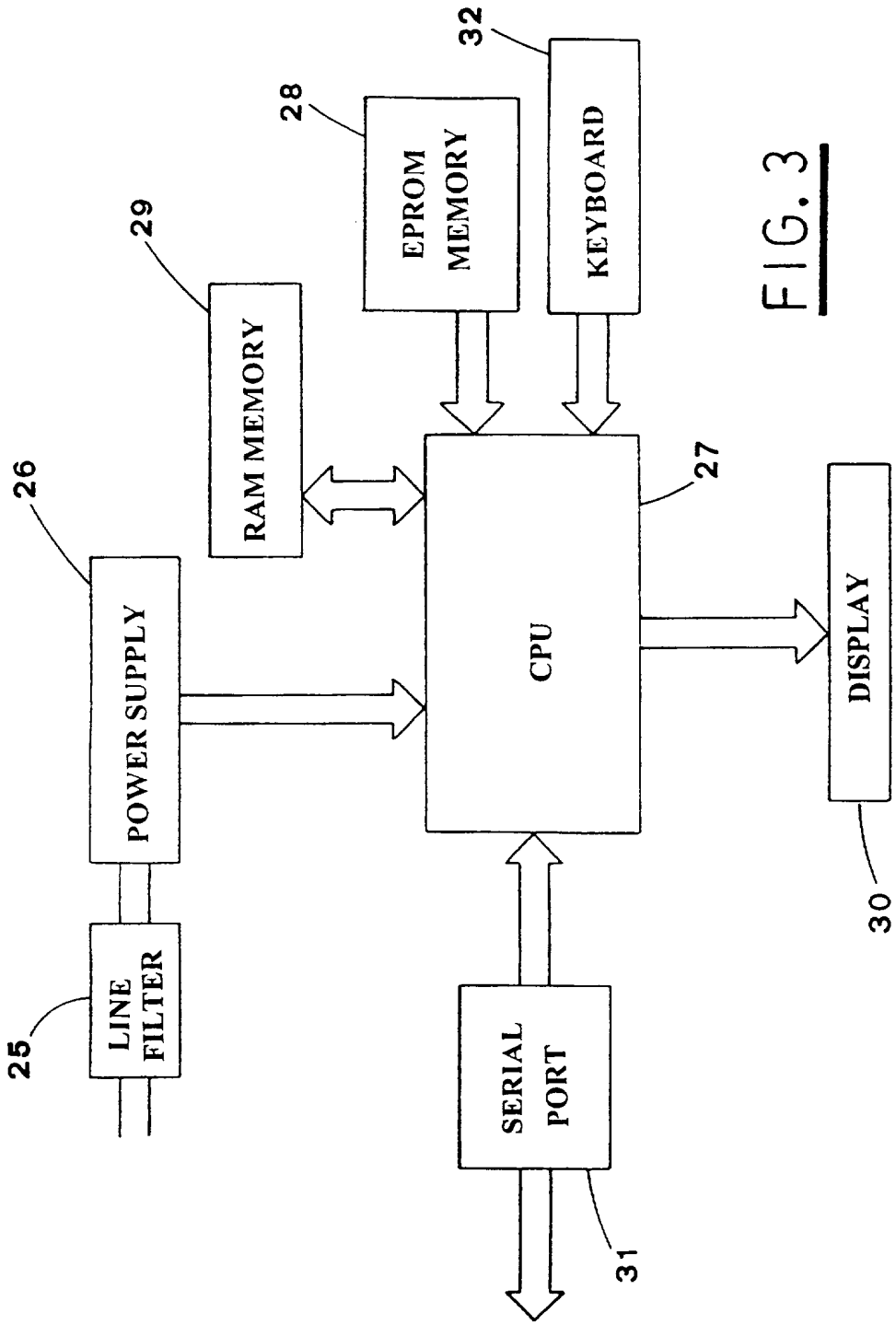
32
28
29
EPROM MEMORY
KEYBOARD
RAM MEMORY
26
27
POWER SUPPLY
CPU
DISPLAY
25
LINE FILTER
SERIAL PORT
30
31

FIG. 3

INTERNATIONAL SEARCH REPORT

Inter ional Application No
PCT/IB 97/00313

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61M21/00

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61M A61B

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	INTERNATIONAL JOURNAL OF BIO-MEDICAL COMPUTING, vol. 37, no. 1, 30 September 1994, SHANNON IE, pages 29-39, XP000474585 COLUCCI R. ET AL: "EXPLAN - a programming language for complex visual stimuli presentation" see page 30, right-hand column, line 10 - page 33, left-hand column, line 7 ---	1-6,8-10
Y	WO 94 26063 A (PINJAROO PTY LIMITED) 10 November 1994 see page 4, line 27 - page 8, line 15 see page 11, line 23 - line 31	1,2,5
X	see page 17, line 39 --- -/--	23

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

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Date of the actual completion of the international search	Date of mailing of the international search report
25 August 1997	08.09.97
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016	Authorized officer Verschelden, J

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inter. nal Application No
PCT/IB 97/00313

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 221 962 A (BACKUS A. ET AL) 22 June 1993 see column 8, line 26 - line 41	1,2,5
A	WO 90 12470 A (GERDAN S.) 18 October 1990 see page 11, line 13 - line 17 see page 11, line 32 - page 12, line 11 see page 13, line 13 - page 14, line 7	1,2,4
A	US 5 017 143 A (BACKUS A. ET AL) 21 May 1991 see column 3, line 42 - line 45 see column 4, line 12 - line 30	1,4
X	US 5 134 484 A (WILLSON J.) 28 July 1992 see column 6, line 25 - column 10, line 48 see column 13, line 34 - column 17, line 49	11-15,24
X	US 5 270 800 A (SWEET R.) 14 December 1993 see column 3, line 56 - line 61 see column 10, line 22 - line 41	11-15,24
X	US 5 027 208 A (DWYER J. ET AL) 25 June 1991 see column 1, line 53 - column 6, line 19	11-15, 24,25
X	FR 2 406 225 A (ALMARIC L.) 11 May 1979 see the whole document	25
X	US 3 060 795 A (CORRIGAN R. ET AL) 30 October 1962 see the whole document	25

3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 97/00313

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

1-22

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

1. claims 1-10: system of producing and transmitting subliminal messages
2. claims 11-22: device for producing and transmitting subliminal messages including a matrix of luminous on/off quick switching elements e.g. an LED matrix array
3. claim 23: device for producing and transmitting subliminal messages in which the messages are reproduced on a liquid crystal display
4. claim 24: device for producing and transmitting subliminal messages in which the messages are reproduced on a cathode ray display
5. claim 25: device for producing and transmitting subliminal messages in which the messages are reproduced on photograms or on video tape

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter nal Application No
PCT/IB 97/00313

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9426063 A	10-11-94	AU 674582 B	02-01-97
		AU 6672494 A	21-11-94
		EP 0697157 A	21-02-96
		JP 8509582 T	08-10-96
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US 5017143 A	21-05-91	NONE	
US 5134484 A	28-07-92	AU 5725190 A	07-01-91
		WO 9015502 A	13-12-90
US 5270800 A	14-12-93	NONE	
US 5027208 A	25-06-91	NONE	
FR 2406225 A	11-05-79	NONE	
US 3060795 A	30-10-62	NONE	