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(54) RADIO CONTROLLED ENGINE KILL SWITCH

FUNKGESTEUERTE WEGFAHRSPERRE

COUPE-CIRCUIT RADIO-COMMANDE POUR MOTEUR

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- **PATENT ABSTRACTS OF JAPAN vol. 009, no. 297 (M-432), 25 November 1985 (1985-11-25) & JP 60 135397 A (MASAYOSHI MANNAKA), 18 July 1985 (1985-07-18)**
- **PATENT ABSTRACTS OF JAPAN vol. 009, no. 255 (E-349), 12 October 1985 (1985-10-12) & JP 60 103736 A (NITSUSHIN DENKI SEISAKUSHO:KK), 8 June 1985 (1985-06-08)**

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] A radio controlled engine kill switch automatically shuts off an engine upon deactivation of a recognized individual code being continually sent by a remote transmitter.

Brief Description of the Prior Art

[0002] Boating is a popular, although dangerous, sport. Although there are frequent reports of boating accidents causing fatalities, many deaths are caused when people fall overboard and drown prior to being found in choppy water. Various safety devices have addressed this problem, however none have provided the combination of mobility and safety. Although the danger around water has been recognized, none of the above prior art has addressed the issue of mobile water device safety pertaining to stopping the mobile device in the event of a passenger or driver overboard.

[0003] U.S. 4,549,169 to Moura et al discloses a safety device that consists of a transmitter and receiver which, upon the lack of signal, an alarm is triggered. The Moura et al patent, however, is only based upon submersion and does not provide for any control based upon distance. In Fr. Patent 2,609,961 an alarm system is disclosed based upon the distance of the transmitter to the receiver. Once the maximum distance is reached, the signal is cut off and one of various actions is taken. In the instant invention, the system is activated by the regulation of distance and elimination of signal through submersion, as the combination of the two provides the greatest safety. Relying solely upon water submersion can cause the system to activate in high seas if a wave washes over the boat. During a storm is the most critical time to use an overboard indicator, yet would present a time for the highest incident of failure. Reliance upon only the distance prevents controllability to the device. Further, in ships such as freighters, the contents can block the signal from a crew member, thereby setting off the alarm as a false signal. The combination of the water submersion with the distance provides additional safety required to enable a broader use of the device.

SUMMARY OF THE INVENTION

[0004] The engine deactivation system has at least one portable transmitter, with an independent power source, such as recharge-able battery, which transmitting a constant individually identifiable signal. A receiver receives and recognizes the identifiable signal from each of the transmitters. Receipt of the signal by the receiver maintains the cut-off in a run mode and interruption of the constant signal from one of the transmitters activates the stop mode. Reinstatement of the transmission of the signal places the cut-off means in a run mode. An on-off device on both the receiver and transmitter can be provided to deactivate each unit. The receiver also has a cut-off which is connected to the engine and maintains a run mode and a stop mode, the stop mode deactivating the engine. A distance controller varies the transmission distance between the transmitter and the receiver. An antenna transmits the signal between the transmitter and receiver. Audio and visual alarms can be also included. An emergency cut-off device should be provided to break transmission of the signal and place the cut-off means in the stop mode, stopping the engine. A protection device preventing the emergency cut-off from being inadvertently activated.

[0005] When the signal is blocked from the receiver the cut-off is placed into the stop mode, thereby cutting off power to the engine. The signal is blocked when the transmitter enters the water of is beyond the transmission range. An override allows the cut-off to be in said run mode without receiving a recognized signal. At least two indicator lights are provided which designate the power status of transmitter and said receiver, including the power level of the independent power supply within the transmitter. The indicator lights can be color coded to designate at least one of recharging, transmitting or low battery status check.

[0006] The transmitter can be stored proximate the receiver when not in use with transmission of the signal beginning upon separation of the transmitter from the receiver. The transmission is stopped once the transmitter is returned to the receiver.

[0007] The receiver can have a coding system which takes the individually identifiable signal from each of the transmitters and codes the receiver to recognize each signal. A data processor can receive data from both the receiver and transmitter, integrating the data into a database and displaying data.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The advantages of the instant disclosure will become more apparent when read with the specification and the drawings, wherein:

FIGURE 1 is a front view of a radio controlled engine kill switch as designed for a small craft;

FIGURE 2 is a front view of an alternate embodiment of the radio controlled engine kill switch of Figure 1;

FIGURE 3 is a schematic view of a radio controlled engine kill switch for a larger craft using a separate transmitter bar and receiver;

FIGURE 4 is a front view of an alternate embodiment of the instant invention;

FIGURE 5 is a perspective view of a single user receiver and transmitter;

FIGURE 6 is an example receiver flow chart for use

with the engine kill switch of Figure 5;
FIGURE 7 is an example transmitter flow chart for use with the engine kill switch of Figure 5;
FIGURE 8 is an example transmitter block diagram for use with the engine kill switch of Figure 5; and
FIGURE 9 is an example receiver block diagram for use with the engine kill switch of Figure 5.

DETAILED DESCRIPTION OF THE INVENTION

[0009] The radio controlled engine kill switch system disclosed herein provides a safety and security device for use on boats, jet skis, and other water craft, as well as a security device for other motor run vehicles. The system maintains activation of the engine only while signals are received from all activated transmitters which have been partnered with the individual receiver. All of the equipment disclosed herein must be weather resistant and capable of withstanding salt water and the corrosion associated therewith.

[0010] Activating the receiver by breaking the transmitter signal provides a critical safety measure. It is critical to turn off the engine as soon as the party enters the water. A unit which institutes the signal upon entry of into the water can fail to obtain the desired effect if the unit is defective. In the disclosed invention, if the unit fails, it fails on the side of safety by turning off the boat. A multiuser radio frequency controlled receiver 14 with multiple transmitters 12, is illustrated in Figure 1. The radio transmitters 12, worn by the operator and each passenger, are coded to interact with the radio receiver 14 installed in the boat or other motor water craft. The RF contact between the transmitter 12 and receiver 14 must be maintained in order for the engine to continue to run. In the event the RF contact is broken, the engine is immediately shut down. Although a wide range of radio frequencies and their respective antenna types, may be applicable, a frequency with low tolerance to transmission through water can be advantageous in some applications. For simplicity in explanation herein, reference will be made to boat engines, however the instant invention can be utilized to deactivate other motor driven water devices, such as jet skis.

[0011] The radio controlled engine kill switch system 10 allows the operator and the occupants the freedom to move about the craft while providing the safety and security benefits of an engine kill switch. Upon boarding nearly any sized power boat, the operator, and all or some designated number of passengers, would attach a small radio transmitter 12 to either their bodies or clothing. Each transmitter 12 transmits its own unique signal which, once activated, is recognized by the receiver 14 mounted within the craft. Activation of the RF signal can be through removal of the transmitter 12 from the receiver 14, an on-off switch, or other means obvious to those skilled in the art. The RF signal can also be continually sent and received, although the drain on the battery is extensive with this method. The receiver 14 is preferably range adjustable and would be set depending upon the size of the craft and the intended use. Therefore, if the passengers were to be fishing, the range would be substantially narrower than if the passengers were water skiing. When the radio transmission from any of the activated transmitters ceases, a switch within the receiver 14 immediately reverses, deactivating the ignition system on the boat engine. With approximately 75% of all boating fatalities being directly related to the operator or an occupant being ejected from their craft, the radio controlled engine kill switch 10 becomes a potentially significant safety device in reducing boating fatalities.

[0012] The radio transmitter 12 component of the engine kill switch 10 is a weather proof device which would be secured around the neck, wrist, arm, waist or ankle of the occupant of a powered boat. When activated, the transmitter 12 transmits a constant radio signal which is recognized by the receiver 14. Depending upon various factors, such as types of antennas used, the transmitter 12 uses a specific, individual code which falls within a specific frequency.

[0013] In addition to the ability to deactivate the engine, the transmitter 12 preferably contains several safety features. Replaceable lithium magnesium dioxide battery or a rechargeable battery such as a NiCad, are optimal to allow the transmitter 12 to recharge while not in use. A visible low battery indicator 16 should also be contained in the transmitter 12 for use with both rechargeable and non-rechargeable batteries. It is also preferable that the transmitters 12 be designed so that a low battery produces the same result as a dead battery. This will minimize the chances of a battery going dead during use. A manually operated "panic button" 18 installed in each transmitter 12 allows any occupant wearing a transmitter 12 to discontinue their individual transmitter's 12 signal, consequently deactivating the motor. This feature is especially useful in the event a passenger who was not wearing a transmitter 12 was thrown overboard. Thus, any passenger wearing a transmitter 12 can deactivate the boat's ignition using the "panic button" 18 without needing to notify the operator of the boat to manually shut down the engine. The panic button 18 can have a cover to avoid inadvertent activation, however, access to the panic button 18 must be rapid and uncomplicated. A spring loaded, flip up cover would be an example of a simple to use, rapid access, cover.

[0014] As stated, each transmitter 12 has a uniquely coded signal with its own ID which is, in turn, recognized by the receiver 14. One of the ways this can be accomplished is by the use of an application specific integrated chip or a microprocessor controller. An example block diagram for both a receiver and transmitter is disclosed herein in Figures 8 and 9. Other methods of recognizing specific ID codes will be known by those versed in the art. By having a uniquely coded signal, each containing its own ID, a large number of transmitters can be oper-

ated on a common frequency. The receiver 14 is mounted directly on the boat, proximate the operator, and wired into the engine, replacing, or supplementing, any existing kill switch wiring. The switching device remains closed as long as the constant signals from all of the recognized, activated transmitters 12 are being received. In the event the receiver 14 loses the activated signal of one of the transmitters 12, the switch opens, grounding or discontinuing power to the motor ignition system and killing the engine.

[0015] As stated, the radio receiver 14 is preferably equipped with the ability to adjust the range of reception between the transmitter and the receiver. This can be through use of a variable sensitivity receiver controlled by a screw, knob or other device, as known in the art. Alternatively, the control can be accessible and the adjustment accomplished by the operator of the boat through a range control 20. By providing the accessible range control 20, the operator is free to change the range dependent upon the current use. In the event the receiver 14 is equipped with an accessible range control 20, a time activated default range is preferably built into the receiver 14. In this way, if the operator sets the range for water skiing and forgets to reset the range, the receiver 14 will automatically reset the range to the default setting after a predetermined period. The ability to adjust the range is necessary to allow for a single system to be used with most sized crafts.

[0016] The electronic circuitry contained in the receiver provides the ability to search and recognize any codes within the specific frequency. At the time of manufacture, the receiver 14 is programmed with a specific frequency. In one method of recognization, the transmitters 12 are manufactured with each transmitting an individual code within this specific frequency. Only these individual codes are embedded within the receiver 14 as corresponding codes. The codes can be embedded into the receiver 14 in any number of methods known in the art. The receiver 14 coded in this manner has the ability to recognize only a certain number of codes within the frequency and the transmitters 12 must transmit only the pre-embedded codes. This is not a preferable method in that it limits the number of transmitters which can be recognized by each receiver and requires closer monitoring of the receiver production. Preferably, the receiver 14 has the capability of recognizing all codes within the frequency and only codes which are programmed into the receiver by transmitters will be active and recognized by the particular receiver. The programming can be "hard", such as switches, "soft", such as light, or other means known, which can transmit information from one source to another. There is an advantage to the receiver recognizing all codes and using soft programming, in that it allows the user to purchase additional transmitters, without concern for matching pre-embedded codes to the receiver, and add these transmitters without the expense of an installer. The receiver can be provided with a "program" mode in which it reads the information from the transmitter, thereby activating the code embedded within the receiver at the time of manufacture. Upon identifying the codes being transmitted, the receiver recognizes those codes as active transmitters. All activated transmitter codes are stored and loss of signal from any active code activates the engine kill switch.

[0017] The receiver 14 is preferably powered by a rechargeable battery, such as nickel cadmium, nickel metal hydride or lithium. The recharging can be achieved by either voltage conversion from a generator, alternator, magneto, magnets, or the like or via photo electric cells. Since all powered boat engines do not have an external power source it is critical that the battery be the energy source powering the receiver.

[0018] Within the scope of powered boat application, various types of antennas can be used with the receiver 14. The type of antenna being, in some instances, dependent upon the type and size of the boat. Frequencies will require coordinating with the type of antenna used, i.e. loop type antennas may require a lower radio frequency transmission than required by an omnidirectional antenna.

[0019] As a further safety feature, a signal/warning strobe 22 is preferably mounted directly on the receiver 14 or, alternatively, on the body of the boat. The strobe 22 serves as a visual reminder and/or warning notice that the kill switch transmitter 12 has been activated. The system is programmable so that in very rough seas where a sudden interruption of power could endanger a boat, the system can be set to trigger only the visual and audible systems. Additionally while it would be obvious for occupants of the boat if the power was interrupted, the strobe serves to warn people boating or diving off the main craft that a problem has arisen. More importantly, however, the strobe 22 acts as a beacon to assist occupants thrown overboard to locate their craft at night. The strobe 22 receives power through a self-contained battery 24, rechargeable or standard, and becomes automatically activated by the deactivation of a transmitter 12 signal. A separate ignition switch can also be provided to manually activate the strobe 22 while the engine is running. The strobe 22 can also be wired directly into the boat battery or other available power source.

[0020] When the transmitted signal from any of the transmitters 12 is broken, the strobe 22 begins to flash simultaneous with, or as an alternative to the opening of the previously described engine kill switch. The strobe 22 continues to flash until either the coded signal from the missing transmitter 12 is recognized by the receiver 14 or the strobe 22, and/or entire system 10 is deactivated.

[0021] An audio warning 26 can be incorporated for further safety, serving as a notification for all on-board and off-board passengers. The audio warning 26 is activated upon deactivation of the transmitter 12 signal. The audio warning 26 can be any pitch which can be heard over a distance and over the sound of the natural

elements. By providing a pitch which will carry over the sounds of the ocean, the audio provides a second means to assist a person thrown overboard to locate the craft. It is also preferable that the audio warning 26 be intermittent to provide better locating capability.

[0022] The strobe 22 and audio warning 26, as well as the engine kill switch system 10, can be manually deactivated, although it is recommended that the deactivation be somewhat complex.

[0023] The radio controlled engine kill switch also serves as an antitheft device. As described herein the receiver will remain closed as long as all transmitter signals are being received. If the operator or an occupant of a powered boat were to voluntarily leave the craft, thereby leaving the predesignated field of the receiver, the switch within the receiver would open and render the boat engine inoperable. Since breaking the transmitter signal would activate the strobe and audio warning, manual deactivation is recommended prior to use as a antitheft device.

[0024] When the transmitter component 12 is used as an antitheft device, and will therefore be separated from the receiver, the strobe 22 and audio warning 26 should be manually deactivated until the transmitter signal was subsequently received. In the event a transmitter 12 is lost, stolen, or in some matter rendered inoperable, the operator may desire to deactivate the signal warning strobe 22 as a convenience. Deactivation in any case would become a conscious, manual decision by the operator. The signal warning strobe 22 deactivation is accomplished by entering a deactivation code into the receiver 14. This code would be a series of numbers, letters, symbols, light signals or the like entered via keypad, or other input devices 28. By successfully entering the warning strobe 22 deactivation code, only the signal warning strobe 22 would be deactivated. The switch within the receiver 14 will remain open due to the loss of a transmitter signal and the engine would remain inoperable. An automatic reset for the deactivation of the signal warning strobe would take place when the receiver 14 recognizes the transmitter 12 signal upon the transmitter's return to the receiver's range. The audio warning 26 can also be provided with the capability to be deactivated in the same manner as the strobe 22 and is preferably deactivated simultaneous with the strobe 22.

[0025] In the event the operator desires to override the entire radio controlled engine kill switch system 10, this would be accomplished in much the same manner as described in the deactivation of the signal warning strobe 22, using a more complicated code. This override procedure would close the engine kill switch allowing the engine to be operated without the kill switch. Deactivation of the engine kill switch would be a totally separate operation and should not render the signal warning strobe inoperable. Optimally, for safety, overriding the kill switch system would activate the signal warning strobe 22. Once the entire system is deactivated, deactivation of the signal warning strobe 22 would constitute a separate action and be accomplished using the prior described action. As a further safety feature, a "confirmation code" can be required if the engine kill switch system 10 and strobe 22 are deactivated within a certain time period from one another.

[0026] In the event a transmitter is lost, broken or otherwise rendered inoperable, the system must be notified that the transmission will no longer be received. This can be accomplished in several ways, the easiest of which is to manually turn off the engine and restart, thereby rebooting the system. This is only applicable to systems where the transmitters are not in physical contact with the receiver and are manually activated. In systems where the transmitters are tied to storage ports the system must be notified and ordered to accept the transmission loss. This can be accomplished through preset entry codes through the input device. Alternatively, a "dummy" transmitter can be included with each system which transmits a code unilaterally accepted by all receivers and allows for the temporary reactivation of the engine.

[0027] While in its simplest form a system is comprised of a single transmitter for the operator, as disclosed heretofore, the technology allows for a substantial number of transmitters to be used with a single receiver. The storage, activation and deactivation of the transmitters will vary dependent upon the size of the application, cost of manufacture and preferences of the end user. In the specific instance of a moderate craft system with approximately ten transmitters, the transmitters can be stored directly into the body of the receiver 14, as illustrated in Figures 1 and 2. Upon inserting the transmitter 12 into a storage port on the receiver 14 deactivation of the transmitted signal would occur. The transmitter 12 can be linked to the storage ports in either of two methods. In the first method, each storage port can be linked to a specific transmitter 12, requiring that the transmitter 12 must be placed on its respective storage port in order to deactivate the signal. This provides the advantage that the names of the users can be placed above the storage port and a transmitter 12 identified with a specific user. Indicator lights 30 can be used to indicate which of the transmitters 12 has activated the kill switch system 10. Alternatively, any transmitter 12 can be placed on any storage port, thereby deactivating the signal. Although this does not provide for the safety feature of knowing the identity of the party carrying each transmitter 12, it does make activation and deactivation simpler. The advantages of each system would be dependent upon the end use. The storage ports can contain a magnetic sensitive reed switch 56, or other means known in the art. When any transmitter is removed from the storage port, the transmitter signal would be automatically activated and recognized by the receiver 14 as an active transmitter 12.

[0028] Figure 2 illustrates an alternate design and incorporates a locating device 58 within the kill switch sys-

tem 50. The locating device 58, is incorporated in the receiver 52, and can be automatically activated upon deactivation of the transmitter 54 signal. The locating device 58 uses standard locating technology which preferably has been wired to become activated when the transmitter 54 signal is broken. By the nature of this device it becomes a locator for the person, or persons, that have broken transmission contact with the receiver 52. A simple directional antenna, tuned to the frequency of the transmitter 54 being worn by the lost party, can easily locate that party. For example, in the event the operator or a passenger wearing a transmitter 54 was separated in violent seas from the craft, the engine kill switch would immediately shut down the engine and/or activate the visual and audible warning systems depending on programming. If the engine was deactivated, due to drift, wind, fog or other conditions, the separated party may be unable to be reunited with the craft. A search party, using a directional antenna, would be able to locate the transmission signal and consequently the lost party. The use of a single frequency provides an advantage by narrowing the scope of the search to the used frequency. Additionally, a single, consistent frequency makes it easier for other parties, such as the coast guard or Global Positioning Systems, to monitor for lost boaters. In the example of a cruise ship, it is entirely possible that a child left at port could be located with a directional antenna. Global positioning systems are decreasing in size, as well as becoming more financially affordable and can be easily incorporated within the disclosed system.

[0029] When larger numbers of transmitters are involved, as illustrated in Figure 3, the transmitters 104 can be stored on a holding bar 102 wired to the receiver 108. The holding bar 102 can be proximate the receiver 108 or in an accessible location a distance from the receiver 108. The receiver 108 can be provided with a viewer 110, such as a LED, which will display the code of any transmitter 104 which has broken its signal with the receiver 108. On large ships, such as cruise or navy craft, the name of the person using each transmitter can be logged into the receiver 108 or tied into the ship's computer, representing a significant safety factor in the event a child fell overboard or was accidentally left at a port stop. In the event a transmission is broken, not only would the usual alarms be activated, but the identification of the person would be known. The loss of a transmitter signal would give an audible and/or visual signal in the control room and allow for appropriate action to be taken. The operator would know immediately, through the computer, all pertinent information concerning the wearer of the disconnected transmitter and expediting location of the user. This type of system would also possibly reduce the liability to the operator. This can also be helpful if it is known in advance that the person will not be in range and that the transmission will be broken, allowing the system 100 to be reset. Alternatively, the receiver 108 can be provided with the capabilities to override the alarm for any one transmitter 104 for a set period of time, reactivating at the expiration of the set period. This system can be advantageous with scuba divers wherein the transmitter 104 can be overridden for the period of time slightly less than the air supply in the tanks.

[0030] Figure 4 illustrates an alternate engine kill switch system 200 wherein the receiver 202 and the transmitters 204 are not in physical contact during storage. Therefore the initial activation and subsequent deactivation must be through means other than removal of the transmitter 204 from the receiver 202. The transmitters 204 are picked up from the storage location and activated either at the storage location or taken to the receiver 202 for activation. Preferably, each transmitter 204 has its own activation light 206 on the receiver 202 to indicate that the transmitter 204 has been activated. Activation of the transmitters 204 can be through numerous methods, such as bar codes or magnetic readers. The emergency cut-off, or panic button, can also be used to activate the transmitter, although the method of activation must be completely different from the operation of the panic button. For example, the panic button would be pulled out and twisted to initiate transmitter activation. In instances where the users are consistent for long periods, such as a naval vessel, the transmitters 204 can be tied to a particular person upon each activation. This can be done through manual entry upon the time of activation or in combination with other identification methods which are currently being used in the particular application. In this embodiment, the indicator lights 206 can be a LED type, thereby providing a name, or other personal identification, upon activation of the transmitter 204.

[0031] A single user unit 300 is illustrated in Figure 5 with the transmitter 308 attached to the receiver 302 for storage and/or recharging. In the embodiment illustrated, the front plate 318 has a larger perimeter than the round insert 304. The use of this configuration allows an easy-to-cut hole to be drilled into the mounting area, electrical connections made, and the unit 300 secured through use of screws or other means known in the art. Once mounted the front plate 318 covers the hole cut to receive the insert 304, providing a quick and easy installation. It should be noted, however, that the illustrated configuration is an example and other configurations can be used for both the front plate and insert.

[0032] As stated heretofore, the transmitter 308 continually sends the specific code to the receiver 302 until the signal is broken, as for example by distance or water. Although the distance between a boat and user would not be as critical prior to the signal being broken, in an overboard situation immediate reaction is required. For this reason, a water sensor 312 is used to immediately break the signal and initiate the engine shut down. As can be seen in the flow chart of Figure 7, once water is detected by the water sensor 312, the transmitter 308 is turned off, and waits in an idle mode until the trans-

mitter 308 is taken out of the water. Various methods can be used to reactivate the transmitter 308 once it is removed from the water, including adding a reactivation switch, including the reactivation in the circuitry, requiring reattachment to the receiver 302, or in the simplest form simply removal from the water. These, and other methods, will be apparent to those skilled in the art.

[0033] The attachment method of the transmitter 308 can be through use of any of several methods, or combinations thereof, known in the art, such as magnets, snap-on clips or a bottom indent. Due to the corrosive nature of salt water, it is preferable that the attachment method be easy to maintain. The transmitter 308 operates on batteries which are placed in the battery receiving area 320. As stated, the batteries are preferably rechargeable and are recharged directly from the receiver 302 in any of the various manners known in the art. The battery receiving area 320 is protected from the elements by closure cap 314. The closure cap 314 also allows for access to the code set panel 322 which contains any of the switches necessary to synchronize the signal with the receiver 302 or make any other manual circuitry changes necessary based on the electronics utilized.

[0034] Both the receiver 302 and the transmitter 308 preferably contain visual or audio means to determine their current status. As an example the illustrated unit 300, both the receiver 302 and transmitter 308 contain lights 306 and 310 respectively. In the example used in Figures 5 - 9, the lights 306 and 310 are both green when the transmitter 308 is attached to the receiver 302 to indicate that the transmitter 308 is charging. Once the transmitter 308 is removed from the receiver 302, the lights 306 and 310 turn red to verify that the link between the transmitter 308 and receiver 302 is in existence. The affronted low battery indicator can also be incorporated into the transmitter light 310 using a flashing mode to indicate the need to recharge. The transmitter's 308 low battery status can also be indicated on the receiver light 306 and would be activated by a weak signal. An audio signal can also be incorporated in the transmitter, similar to those used in pagers, to indicate a low battery.

[0035] The receiver 302 is armed or disarmed through use of a key switch 316. This also allows the system to be reset when needed. The key switch 316 can be provided with positions to arm, reset or disarm the system, thereby providing more alternatives for the user than simple on/off modes.

[0036] Figures 6 and 7 provide example control flowcharts for the receiver 302 and transmitter 308 of Figure 5. The block diagrams of the example transmitter and receiver are illustrated in Figures 8 and 9. As can be seen from Figure 6, once activated the receiver continually verifies that a code is being received, checking the code against the known address of the "partnered" transmitter. If the received code address matches the known code address, the receiver proceeds to cycle through the process. If, however, the code is not received, or an incorrect address is received, the system disables the motor. Various checks and balances, examples of which are illustrated in the flow chart 600, should be incorporated to prevent false shut downs. The transmitter 308, as charted in flow chart 610 continues in a stand-by mode until detached from the receiver. Once the transmitter is detached from the receiver, the transmitter circuitry adds the transmission loop, continually checking for the presence of water. If water is not detected, the system continues to loop. When water is detected, the system turns off the transmitter and enters a sub-loop continually checking for the presence of water. Once the transmitter is out of the water, the main loop is re-entered and the system proceeds transmitting. The basic elements of the receiver and transmitter are illustrated in the block diagrams 620 and 640.

[0037] The activation of the transmitter at the time of use can be incorporated with any of the foregoing embodiments. In the embodiments wherein the transmitter is activated by means other than removal from the receiver, a shut down mode must be provided. This can be accomplished through manual entry, repeating the initial activation step, turning off the engine or a combination thereof. Optionally more than one action can be required to shut down the transmitters in order to prevent inadvertent transmitter shut down. Additionally, any of the described features, such as audio alarm, locator, etc., can be utilized with any embodiment, whether or not it was described or shown in conjunction with the embodiment.

[0038] As stated heretofore, there are instances when automatically shutting down the engine can place the craft in danger of being capsized. As an alternative to manually switching from engine shut down to visual/audible systems, the engine kill switch can be used in conjunction with computerized sensing devices. The sending devices should track both the degree pitch and duration of time the craft has been pitching. Thus, in the event a signal is broken, the system checks the sensing device. If the pitch is greater than a preset standard and has been continuing for greater than the preset period of time, the system makes the determination not to shut off the engine. By checking both the duration of the pitching, as well as the degree, boat wakes and other short term disturbances, will not eliminate the deactivation of the engine.

[0039] The disclosed system can also be modified to serve as antitheft for rental boats, water skis, and other engine powered vehicles. The vehicles would be equipped with a small, single transmitter receiver. The transmitter would operate as described heretofore, with the addition of a programmable time and signal chip. The transmitters would be programmed to transmit a code to the receiver for a predetermined amount of time, for example one and a half hours in the event of an one hour rental. After the predetermined time has run out, the code would cease transmitting, therefore deactivating the engine. A location code would subsequently commence transmission, allowing the owner of the ve-

hicle to locate the missing vehicle. For safety reasons, it is recommended that a warning signal be emitted from the receiver and/or transmitter indicating that the vehicle must be returned. A countdown timer can also be incorporated in the receiver, indicating the time remaining on the rental.

[0040] Since other modifications and changes varied to fit particular operating requirements and environments will be apparent to those skilled in the art, the invention is not considered limited to the example chosen for the purposes of disclosure, and covers all changes and modifications which do not constitute departures from the scope of this invention as disclosed in the appended claims.

Claims

1. An engine deactivation system (10, 100) for use with user operated water vehicles, said system (10, 100) having at least one waterproof transmitter (12,54,104,204,308), each of said at least one transmitter (12,54,104,204,308) being a portable device transmitting a constant individually identifiable signal powered by an independent power supply, a receiver (14, 52, 108, 202, 302), said receiver (14,52,108,202,302) receiving and recognizing said individually identifiable signal from each of said at least one transmitter (12,54,104,204,308), said receiver (14,52,108,202,302) having cut-off means (18), said cut-off means (18) being connected to an engine and having a run mode and a deactivation mode, said deactivation mode shutting down said engine; and an antenna, said antenna transmitting said signal between said transmitter (12,54,104, 204,308) and said receiver (14,52,108,202,302),

water sensor means (312) within said transmitter (12,54,104,204,308) said water sensor means (312) halting transmission of said signal from said transmitter (12,54,104,204,308) to said receiver (14,52,108,202,302) upon submersion in water, said signal being water sensitive and blocked from said receiver (14,52,108,202,302) when said transmitter (12,54,104,204,308) enters the water; **characterized by**:

distance control back up means, said distance control back up means varying the signal recognition threshold between said transmitter (12,54, 104,204,308) and said receiver (14,52,108,202, 302), immediately activating said deactivation mode upon separation of said transmitter (12,54, 104,204,308) and said receiver (14,52,108,202, 302) beyond a predetermined distance; manual reset means, said manual reset means over riding said receiver (14,52,108,202,302) cut-off means (18) to manually place said cut-off means (18) in said run mode or said deactivation mode;

wherein receipt of said signal by said receiver (14,52,108,202,302) maintains said cut-off means (18) in a run mode and interruption of said constant signal from one of said at least one transmitter (12,54,104,204,308) immediately activates said deactivation mode, thereby requiring reactivation of said vehicle by reinstating transmission of said signal to place said cut-off means (18) in said run mode or over riding said cut-off means (18) with said manual reset means.

2. The engine deactivation system (10, 100) of claim 1 further comprising on-off means, said on-off means deactivating said receiver (14,52,108,202, 302).

3. The engine deactivation system (10, 100) of claim 1 wherein said transmitter (12, 54, 104, 204, 308) is in a position proximate said receiver (14,52,108, 202,302) when not in use, wherein said proximate position provides recharging of said power supply.

4. The engine deactivation system (10, 100) of claim 3 wherein said transmitter (12, 54, 104, 204, 308) begins transmitting said signal upon separation of said transmitter (12,54,104,204,308) from said receiver (14,52,108,202,302) and ceases transmission when proximate said receiver (14,52,108,202, 302) whereby said receiver's acknowledging said transmitter's proximity maintains said cut-off means (18) in said run mode.

5. The engine deactivation system (10, 100) of claim 1 wherein said transmitter (12, 54, 104, 204, 308) further comprises an on/off means.

6. The engine deactivation system (10, 100) of claim 1 further comprising at least two indicator lights (16, 30, 206, 306, 310), said indicator lights (16, 30, 206, 306, 310) designating the power status of said transmitter (12,54,104,204,308) and said receiver (14,52,108,202,302).

7. The engine deactivation system (10, 100) of claim 6 wherein said indicator lights (16, 30, 206, 306, 310) designate the power level of said independent power supply within said transmitter (12, 54,104, 204,308).

8. The engine deactivation system (10, 100) of claim 7 wherein said indicator lights (16, 30, 206, 306, 310) are color coded to designate at least one of recharging, transmitting or low battery status check.

9. The engine deactivation system (10, 100) of claim 1 wherein said receiver (14, 52, 108, 202, 302) has coding means, said coding means taking said individually identifiable signal from each of said at least one transmitter (12,54,104,204,308) and coding

said receiver (14,52,108,202,302) to recognize each of said individually identifiable signals.

10. The engine deactivation system (10, 100) of claim 1 further comprising data processing means, said data processing means receiving data identifying said individual signal from each of said at least one transmitter (12,54,104,204,308) said receiver (14,52,108,202,302) confirming each of said at least one transmitter (12,54,104,204,308) is in communication with said receiver (14,52,108,202,302), integrating data received from said individual signal into a database and displaying said integrated data.

11. The engine deactivation system (10, 100) of claim 1 further comprising direct over ride means within said receiver (14,52,108,202,302), said direct over ride means enabling said vehicle to remain in said run mode without activating said transmitter (12,54,104,204,308) to re-transmit said signal.

12. The engine deactivation system (10, 100) of claim 1 further comprising water resistant audio alarm means (26), said audio alarm means (26) having a pitch capable of being heard over ocean waves and ambient sound and being activated upon deactivation of said transmitter (12, 54, 104, 204, 308) signal.

13. The engine deactivation system (10, 100) of claim 1 further comprising waterproof visual alarm means (22), said visual alarm means (22) having a sufficient intensity to be seen long distances in inclement weather and being activated upon deactivation of said transmitter (12,54,104,204,308) signal.

14. The engine deactivation system (10, 100) of claim 1 further comprising an emergency cut-off means (18) within each of said at least one transmitter (12,54,104,204,308), manual activation of said emergency cut-off means (18) breaking transmission of said signal, thereby placing said cut-off means (18) in said deactivation mode.

15. The engine deactivation system (10, 100) of claim 14 further comprising protection means, said protection means preventing said emergency cut-off means (18) from being inadvertently activated.

16. The method of disabling an engine by the elimination of an individually recognized signal using a device having at least one waterproof transmitter (12,54,104,204,308), each of said at least one waterproof transmitter (12,54,104,204,308) being a portable device transmitting a constant individually identifiable signal powered by an independent power supply, said signal having a low transmission through water; at least one indicator light (16, 30, 206, 306, 310), said indicator light (16, 30, 206, 306, 310) designating the power status of said transmitter (12, 54, 104, 204,308);

a receiver (14,52,108,202,302), said receiver (14,52,108,202,302) receiving and recognizing said identifiable signal from each of said transmitters (12,54,104,204,308), said receiver (14,52,108,202,302) having cut-off means (18), said cut-off means (18) being connected to an engine and having a run mode and a deactivation mode, said deactivation mode shutting down said engine; on-off means, said on-off means deactivating said receiver (14, 52, 108, 202,302); at least one indicator light (16, 30, 206, 306, 310), said indicator light (16, 30, 206, 306, 310) designating the power status of said receiver (14,52,108,202,302); manual reset means, said manual reset means over riding said receiver (14,52,108,202,302) cut-off means (18) to manually place said cut-off means (18) in said run mode or in said deactivation mode, an antenna, said antenna transmitting said signal between said transmitter (12,54,104,204,308) and said receiver (14,52,108,202,302), **characterized by** the steps of:

a) activating said receiver (14,52,108,202,302) through said on-off means;
b) verifying the power status of said transmitter (12,54,104,204,308);
c) setting distance control means, said distance control means varying the maximum transmission distance between said transmitter (12,54, 104,204,308) and said receiver (14, 52, 108, 202,302
d) placing said cut-off means (18) in said deactivation mode;
c) attaching said transmitter (12,54,104,204, 308) to a user;
d) verifying that said receiver (14,52,108,202, 302) is receiving said individually identifiable signal;
e) deactivating said transmitter when said transmitter senses the presence of water and reactivating said transmitter when said transmitter does not sense the presence of water;

wherein receipt of said signal by said receiver (14,52,108,202,302) maintains said cut-off means (18) in a run mode and interruption of said constant signal from any one of said at least one transmitter (12,54,104,204,308), immediately activates said deactivation mode, thereby requiring reactivation of said vehicle by reinstating transmission of said signal to place said cut-off means (18) in said run mode or over riding said cut-off means (18) with, said manual reset means.

Patentansprüche

1. Motorinaktivierungssystem (10,100) zur Verwendung mit anwenderbetriebenen Wasserfahrzeugen, wobei das System (10,100) wenigstens einen wasserdichten Sender (12,54,104,204,308) aufweist, wobei jeder der wenigstens einen Sender (12,54,104,204,308) eine tragbare Anordnung ist, welche ein konstantes individuell identifizierbares Signal sendet und durch eine unabhängige Stromquelle gespeist wird, und einen Empfänger (14,52,108,202,302), wobei der Empfänger (14,52,108,202,302) das individuell identifizierbare Signal von jedem der wenigstens einen Sender (12,54,104,204,308) empfängt und erkennt, wobei der Empfänger (14,52,108,202,302) Abschaltungsmittel (18) umfasst, wobei die Abschaltungsmittel (18) mit einem Motor verbunden sind und eine Lauf-Betriebsart sowie eine Inaktivierungs-Betriebsart aufweisen, wobei die Inaktivierungs-Betriebsart den Motor ausschaltet; sowie eine Antenne, wobei die Antenne das Signal zwischen dem Sender (12,54,104,204,308) und dem Empfänger (14,52,108,202,302) überträgt,

Wassersensormittel (312) innerhalb des Senders (12,52,104,204,308), wobei die Wassersensormittel (312) Übertragung des Signals vom Sender (12,54,104,204,308) zum Empfänger (14,52,108,202,302) beim Eintauchen in Wasser anhaltet, wobei das Signal wasserempfindlich ist und vom Empfänger (14,52,108,202,302) abgeblockt wird, wenn der Sender (12,54,104,204,308) in das Wasser eintritt; **gekennzeichnet durch**

Entfernungsüberwachungsreservemittel, welche die Signalerkennungsschwelle zwischen dem Sender (12,54,104,204,308) und dem Empfänger (14,52,108,202,302) variieren, und unmittelbar die Deaktivierungs-Betriebsart bei Trennung des Senders (12,54,104,204,308) und des Empfängers (14,52,108,202,302) über eine festgelegte Entfernung aktivieren;

manuelle Rückstellmittel, wobei die Rückstellmittel den Empfänger- (14,52,108,202,302) Abschaltungsmitteln (18) übergeordnet sind, um die genannten Abschaltungsmittel (18) manuell in die Lauf- Betriebsart oder Deaktivierungs-Betriebsart zu stellen;

wobei der Empfang des Signals **durch** den Empfänger (14,52,108,202,302) die Abschaltungsmittel (18) in einer Lauf-Betriebsart aufrecht halten und Unterbrechung des konstanten Signals von einem der wenigstens einen Sender (12,54,104,204,308) unmittelbar die Deaktivierungs-Betriebsart aktiviert, wodurch Reaktivierung des Fahrzeuges **durch** Wiederherstellung der Aussendung des Signals notwendig ist, um die Abschaltungsmittel (18) in die Lauf-Betriebsart zu versetzen oder **durch** Umgehen der Abschaltungsmittel (18) mittels der manuellen Rückstellmittel.

2. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, desweiteren umfassend An/Aus-Mittel, welche den Empfänger (14,52,108,202,302) deaktivieren.

3. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, wobei der Sender (12,54,104,204,308) in einer Position nahe dem Empfänger (14,52,108,202,302) ist, wenn dieser nicht im Gebrauch ist, wobei die nahegelegene Position ein Aufladen der Stromquelle ermöglicht.

4. Motorinaktivierungssystem (10,100) gemäß Anspruch 3, wobei der Sender (12,54,104,204,308) bei Trennung des Senders (12,54,104,204,308) vom Empfänger (14,52,108,202,302) das Signal zu senden beginnt und zu Senden aufhört, wenn der Empfänger (14,52,108,202,302) nahe dem Sender ist, wobei das Quittieren der Nähe des Senders durch den Empfänger die Abschaltungsmittel (18) in der Lauf-Betriebsart aufrecht hält.

5. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, wobei der Sender (12,54,104,204,308) desweiteren ein An/Aus-Mittel umfasst.

6. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, desweiteren umfassend wenigstens zwei Anzeigelampen (16,30,206,306,310), wobei die Anzeigelampen (16,30,206,306,310) den Energiezustand des Senders (12,54,104,204,308) und des Empfängers (14,52,108,202,302) bezeichnen.

7. Motorinaktivierungssystem (10,100) gemäß Anspruch 6, wobei die Anzeigelampen (16,30,206,306,310) das Energieniveau der unabhängigen Energiequelle innerhalb des Senders (12,54,104,204,308) bezeichnen.

8. Motorinaktivierungssystem (10,100) gemäß Anspruch 7, wobei die Anzeigelampen (16,30,206,306,310) farbkodiert sind, um wenigstens einen der Zustände Aufladen, Senden oder niedriger Batteriezustand kontrollieren, bezeichnen.

9. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, wobei der Empfänger (14,52,108,202,302) Kodierungsmittel umfasst, wobei die Kodierungsmittel die individuell identifizierbaren Signale von jedem der wenigstens einen Sender (12,54,104,204,308) nehmen und den Empfänger (14,52,108,202,302) kodieren, um jedes der individuell identifizierbaren Signale zu erkennen.

10. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, desweiteren umfassend Datenverarbei-

tungsmittel, wobei die Datenverarbeitungsmittel Daten empfangen, welche die individuellen Signale von jedem der wenigstens einen Sender (12,54, 104,204,308) identifizieren, wobei der Empfänger (14,52,108,202,302) bestätigt, dass jeder der wenigstens einen Sender (12,54,104,204,308) mit dem Empfänger (14,52,108,202,302) in Kommunikation ist, wobei empfangene Daten von dem individuellen Signal in eine Datenbank eingegliedert werden und die eingegliederten Daten angezeigt werden.

11. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, desweiteren umfassend direkte Umgehungsmittel innerhalb des Empfängers (14,52,108, 202,302), wobei die direkten Umgehungsmittel dem Fahrzeug ermöglichen, in der Lauf-Betriebsart zu verbleiben, ohne dass der Sender (12,54,104,204, 308) aktiviert wird, um das Signal erneut zu senden.

12. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, desweiteren umfassend wasserbeständige Audioalarmmittel (26), wobei die Audioalarmmittel (26) eine Tonhöhe aufweisen, welche über Ozeanwellen und Umgebungsgeräusche gehört werden kann, und wobei die Audioalarmmittel (26) bei Inaktivierung des Signals vom Sender (12,54,104,204,308) aktiviert werden.

13. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, desweiteren umfassend wasserbeständige visuelle Alarmmittel (22), wobei die visuellen Alarmmittel (22) eine ausreichende Helligkeit aufweisen, um über eine weite Entfernung in rauhem Wetter gesehen zu werden, und wobei die visuellen Alarmmittel (22) bei Inaktivierung des Signals vom Sender (12,54,104,204,308) aktiviert werden.

14. Motorinaktivierungssystem (10,100) gemäß Anspruch 1, desweiteren umfassend ein Notfalls-Abschaltungsmittel (18) innerhalb jedem der wenigstens einen Sender (12,54,104,204,308), wobei manuelle Aktivierung des Notfalls-Abschaltungsmittels (18) die Aussendung des Signals unterbricht, und dadurch die Abschaltungsmittel (18) in die Inaktivierungs-Betriebsart versetzt.

15. Motorinaktivierungssystem (10,100) gemäß Anspruch 14, desweiteren umfassend Schutzmittel, wobei die Schutzmittel verhindern, dass die Notfalls-Abschaltungsmittel (18) aus Versehen aktiviert werden.

16. Verfahren zum Sperren eines Motors durch Entfernung eines individuell erkennbaren Signals, welche eine Anordnung verwendet, die wenigstens einen wasserdichten Sender (12,54,104,204,308) aufweist, wobei jeder der wenigstens einen wasserdichten Sender (12,54,104,204,308) eine tragbare Anordnung ist, welche konstant ein individuell identifizierbares Signal aussendet und von einer unabhängigen Energiequelle gespeist wird, wobei das Signal eine geringe Übertragung durch Wasser aufweist; wenigstens eine Anzeigelampe (16,30,206, 306,310), wobei die Anzeigelampe (16,30,206,306, 310) den Energiezustand des Senders (12, 54,104,204,308) bezeichnet;

ein Empfänger (14, 52, 108, 202, 302), wobei der Empfänger (14, 52, 108, 202, 302) das identifizierbare Signal von jedem der Empfänger (12,54, 104,204,308) empfängt und erkennt, wobei der Empfänger (14,52,108,202,302) Abschaltungsmittel (18) aufweist, wobei die Abschaltungsmittel (18) mit einem Motor verbunden sind, und eine Lauf-Betriebsart und eine Inaktivierungs-Betriebsart besitzen, wobei die Inaktivierungs-Betriebsart den Motor abschaltet; An/Aus-Mittel, wobei die An/Aus-Mittel den Empfänger (14, 52, 108, 202, 302) inaktivieren; wenigstens eine Anzeigelampe (16, 30, 206, 306, 310), wobei die Anzeigelampe (16, 30, 206, 306, 310) den Energiezustand des Empfängers (14, 52, 108, 202, 302) bezeichnet; manuelle Rückstellmittel zum Umgehen der Empfänger- (14, 52, 108, 202, 302) Abschaltungsmittel (18), um die Abschaltungsmittel (18) manuell in die Lauf-Betriebsart oder in die Inaktivierungs-Betriebsart zu versetzen, sowie eine Antenne, wobei die Antenne das Signal zwischen dem Sender (12,54,104,204,308) und dem Empfänger (14,52,108,202,302) überträgt, **gekennzeichnet durch** die Schritte:

a) Aktivieren des Empfängers (14,52,108,202, 302) **durch** die An/Aus-Mittel;
b) Überprüfen des Energiezustandes des Senders (12,54,104,204,308);
c) Einstellen von Entfernungsüberwachungsmitteln, wobei die Entfernungsüberwachungsmittel die maximale Übertragungsentfernung zwischen dem Sender (12,54,104,204,308) und dem Empfänger (14,52,108,202,302) variieren;
d) Versetzen der Abschaltungsmittel (18) in die Inaktivierungs-Betriebsart;
c) Befestigen des Senders (12,54,104,204, 308) an einen Benutzer;
d) Überprüfen, dass der Empfänger (14,52, 108,202,302) das individuell identifizierbare Signal empfängt;
e) Inaktivieren des Senders, wenn der Sender das Vorhandensein von Wasser erkennt und Reaktivieren des Senders, wenn der Sender kein Vorhandensein von Wasser erkennt;

wobei Empfang des Signals **durch** den Empfänger (14,52,108,202,302) die Abschaltungsmittel (18) in einer Lauf-Betriebsart aufrecht erhält und

Unterbrechung des konstanten Signals von einem der wenigstens einen Sender (12,54,104,204,308) unmittelbar die Inaktivierungs-Betriebsart aktiviert, wodurch eine Reaktivierung des Fahrzeuges **durch** Wiedereinsetzen der Aussendung des Signals notwendig wird, um die Abschaltungsmittel (18) in die Lauf-Betriebsart zu versetzen oder die Abschaltungsmittel (18) mit den manuellen Rückstellmitteln zu umgehen.

Revendications

1. Système de désactivation d'un moteur (10, 100) destiné à être utilisé avec des véhicules nautiques actionnés par un utilisateur, ledit système (10, 100) ayant au moins un émetteur étanche à l'eau (12, 54, 104, 204, 308), chacun desdits au moins un émetteur(s) (12, 54, 104, 204, 308) étant un appareil mobile transmettant un signal constant identifiable individuellement et alimenté par une alimentation électrique indépendante, un récepteur (14, 52, 108, 202, 302), ledit récepteur (14, 52, 108, 202, 302) recevant et reconnaissant ledit signal identifiable individuellement émis depuis chacun desdits au moins un émetteur(s) (12, 54, 104, 204, 308), ledit récepteur (14, 52, 108, 202, 302) ayant un moyen de coupure (18), ledit moyen de coupure (18) étant connecté à un moteur et ayant un mode de fonctionnement et un mode de désactivation, ledit mode de désactivation arrêtant ledit moteur, et une antenne, ladite antenne transmettant ledit signal entre ledit émetteur (12, 54, 104, 204, 308) et ledit récepteur (14, 52, 108, 202, 302), un moyen détecteur d'humidité (312) dans ledit émetteur (12, 54, 104, 204, 308), ledit moyen détecteur d'humidité (312) arrêtant la transmission dudit signal depuis ledit émetteur (12, 54, 104, 204, 308) vers ledit récepteur (14, 52, 108, 202, 302) en cas de submersion dans l'eau, ledit signal étant sensible à l'eau et bloqué par ledit récepteur (14, 52, 108, 202, 302) lorsque ledit émetteur (12, 54, 104, 204, 308) entre dans l'eau ;
caractérisé par
un moyen de commande à distance de secours, ledit moyen de commande à distance de secours modifiant le seuil d'identification du signal entre ledit émetteur (12, 54, 104, 204, 308) et ledit récepteur (14, 52, 108, 202, 302), activant immédiatement ledit mode de désactivation lors de la séparation dudit émetteur (12, 54, 104, 204, 308) d'avec ledit récepteur (14, 52, 108, 202, 302) au-delà d'une distance prédéterminée; un moyen de réinitialisation manuel, ledit moyen de réinitialisation manuel ayant la priorité sur le moyen de coupure (18) dudit récepteur (14, 52, 108, 202, 302) pour positionner manuellement ledit moyen de coupure (18) sur ledit mode de fonctionnement ou ledit mode de désactivation;
dans lequel la réception dudit signal par ledit récepteur (14, 52, 108, 202, 302) maintient ledit moyen de coupure (18) sur le mode de fonctionnement et l'interruption dudit signal constant émis par un desdits au moins un émetteur(s) (12, 54, 104, 204, 308) active immédiatement ledit mode de désactivation, nécessitant ainsi la réactivation dudit véhicule en rétablissant la transmission dudit signal pour positionner ledit moyen de coupure (18) sur ledit mode de fonctionnement ou en prenant la priorité sur ledit moyen de coupure (18) à l'aide dudit moyen de réinitialisation manuel.

2. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
comprenant en outre un moyen de marche/arrêt, ledit moyen de marche/arrêt désactivant ledit récepteur (14, 52, 108, 202, 302).

3. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
dans lequel ledit émetteur (12, 54, 104, 204, 308) est dans une position proche dudit récepteur (14, 52, 108, 202, 302) lorsqu'il ne fonctionne pas, et dans lequel ladite position proche permet de recharger ladite alimentation électrique.

4. Système de désactivation d'un moteur (10, 100) selon la revendication 3,
dans lequel ledit émetteur (12, 54, 104, 204, 308) commence à transmettre ledit signal en cas de séparation dudit émetteur (12, 54, 104, 204, 308) d'avec ledit récepteur (14, 52, 108, 202, 302) et cesse la transmission lorsqu'il est à proximité dudit récepteur (14, 52, 108, 202, 302), grâce à quoi la reconnaissance par ledit récepteur de la proximité dudit émetteur maintient ledit moyen de coupure (18) dans ledit mode de fonctionnement.

5. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
dans lequel ledit émetteur (12, 54, 104, 204, 308) comprend en outre un moyen de marche/arrêt.

6. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
comprenant en outre au moins deux lampes témoins (16, 30, 206, 306, 310), lesdites lampes témoins (16, 30, 206, 306, 310) désignant l'état de puissance dudit émetteur (12, 54, 104, 204, 308) et dudit récepteur (14, 52, 108, 202, 302).

7. Système de désactivation d'un moteur (10, 100) selon la revendication 6,
dans lequel lesdites lampes témoins (16, 30, 206, 306, 310) désignent le niveau de puissance de ladite alimentation électrique indépendante dans ledit

émetteur (12, 54, 104, 204, 308).

8. Système de désactivation d'un moteur (10, 100) selon la revendication 7,
dans lequel lesdites lampes témoins (16, 30, 206, 306, 310) ont des codes de couleur pour désigner au moins un contrôle d'état relatif à la recharge, à la transmission ou au niveau faible des piles.

9. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
dans lequel ledit récepteur (14, 52, 108, 202, 302) a un moyen de codage, ledit moyen de codage prenant ledit signal identifiable individuellement émis depuis chacun desdits au moins un émetteur(s) (12, 54, 104, 204, 308) et codant ledit récepteur (14, 52, 108, 202, 302) pour reconnaître chacun desdits signaux identifiables individuellement.

10. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
comprenant en outre un moyen de traitement de données, ledit moyen de traitement de données recevant des données identifiant ledit signal individuel émis depuis chacun desdits au moins un émetteur(s) (12, 54, 104, 204, 308), ledit récepteur (14, 52, 108, 202, 302) confirmant que chacun desdits au moins un émetteur(s) (12, 54, 104, 204, 308) est en communication avec ledit récepteur (14, 52, 108, 202, 302), intégrant les données reçues dudit signal individuel dans une base de données et affichant lesdites données intégrées.

11. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
comprenant en outre un moyen de priorité directe au sein dudit récepteur (14, 52, 108, 202, 302), ledit moyen de priorité directe permettant audit véhicule de rester dans ledit mode de fonctionnement sans activer ledit émetteur (12, 54, 104, 204, 308) pour retransmettre ledit signal.

12. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
comprenant en outre un moyen d'alarme sonore résistant à l'eau (26), ledit moyen d'alarme sonore (26) ayant une hauteur pouvant être entendue magré le bruit des vagues océaniques et les sons ambiants, et étant activé par la désactivation dudit signal de l'émetteur (12, 54, 104, 204, 308).

13. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
comprenant en outre un moyen d'alarme visuelle étanche à l'eau (22), ledit moyen d'alarme visuelle (22) ayant une intensité suffisante pour être vue sur de grandes distances en cas de météo inclémente et étant activé par la désactivation dudit signal de l'émetteur (12, 54, 104, 204, 308).

14. Système de désactivation d'un moteur (10, 100) selon la revendication 1,
comprenant en outre un moyen de coupure d'urgence (18) dans chacun desdits au moins un émetteur(s) (12, 54, 104, 204, 308), l'activation manuelle dudit moyen de coupure d'urgence (18) arrêtant la transmission dudit signal, plaçant ainsi ledit moyen de coupure (18) sur ledit mode de désactivation.

15. Système de désactivation d'un moteur (10, 100) selon la revendication 14,
comprenant en outre un moyen de protection, ledit moyen de protection empêchant ledit moyen de coupure d'urgence (18) d'être activé par inadvertance.

16. Procédé de neutralisation d'un moteur par l'élimination d'un signal reconnu individuellement au moyen d'un système ayant au moins un émetteur étanche à l'eau (12, 54, 104, 204, 308), chacun desdits au moins un émetteur(s) étanche (s) (12, 54, 104, 204, 308) étant un appareil mobile transmettant un signal constant identifiable individuellement et alimenté par une alimentation électrique indépendante, ledit signal ayant une transmission faible dans l'eau; au moins une lampe témoin (16, 30, 206, 306, 310), ladite lampe témoin (16, 30, 206, 306, 310) désignant l'état de puissance dudit émetteur (12, 54, 104, 204, 308);
un récepteur (14, 52, 108, 202, 302), ledit récepteur (14, 52, 108, 202, 302) recevant et reconnaissant ledit signal identifiable émis depuis chacun desdits émetteurs (12, 54, 104, 204, 308), ledit récepteur (14, 52, 108, 202, 302) ayant un moyen de coupure (18), ledit moyen de coupure (18) étant connecté à un moteur et ayant un mode de fonctionnement et un mode de désactivation, ledit mode de désactivation arrêtant ledit moteur; un moyen de marche/arrêt, ledit moyen de marche/ arrêt désactivant ledit récepteur (14, 52, 108, 202, 302); au moins une lampe témoin (16, 30, 206, 306, 310), ladite lampe témoin (16, 30, 206, 306, 310) désignant l'état de puissance dudit récepteur (14, 52, 108, 202, 302); un moyen de réinitialisation manuel, ledit moyen de réinitialisation manuel ayant la priorité sur ledit moyen de coupure (18) dudit récepteur (14, 52, 108, 202, 302) pour positionner manuellement ledit moyen de coupure (18) sur ledit mode de fonctionnement ou ledit mode de désactivation; une antenne, ladite antenne transmettant ledit signal entre ledit émetteur (12, 54, 104, 204, 308) et ledit récepteur (14, 52, 108, 202, 302),
caractérisé par les étapes consistant à :

a) activer ledit récepteur (14, 52, 108, 202, 302) au moyen dudit moyen de marche/arrêt;

b) vérifier l'état de puissance dudit émetteur (12, 54, 104, 204, 308);

c) régler un moyen de commande à distance, ledit moyen de commande à distance modifiant la distance de transmission maximale entre ledit émetteur (12, 54, 104, 204, 308) et ledit récepteur (14, 52, 108, 202, 302);

d) placer ledit moyen de coupure (18) sur ledit mode de désactivation;

c) attacher ledit émetteur (12, 54, 104, 204, 308) à un utilisateur;

d) vérifier que ledit récepteur (14, 52, 108, 202, 302) reçoit ledit signal identifiable individuellement;

e) désactiver ledit émetteur lorsque ledit émetteur détecte une présence d'eau et réactiver ledit émetteur lorsque ledit émetteur ne détecte pas de présence d'eau;
dans lequel la réception dudit signal par ledit récepteur (14, 52, 108, 202, 302) maintient ledit moyen de coupure (18) dans un mode de fonctionnement et l'interruption dudit signal constant émis par un desdits au moins un émetteur (s) (12, 54, 104, 204, 308) active immédiatement ledit mode de désactivation, nécessitant ainsi la réactivation dudit véhicule en rétablissant la transmission dudit signal pour positionner ledit moyen de coupure (18) dans ledit mode de fonctionnement ou en prenant la priorité sur ledit moyen de coupure (18) à l'aide dudit moyen de réinitialisation manuel.

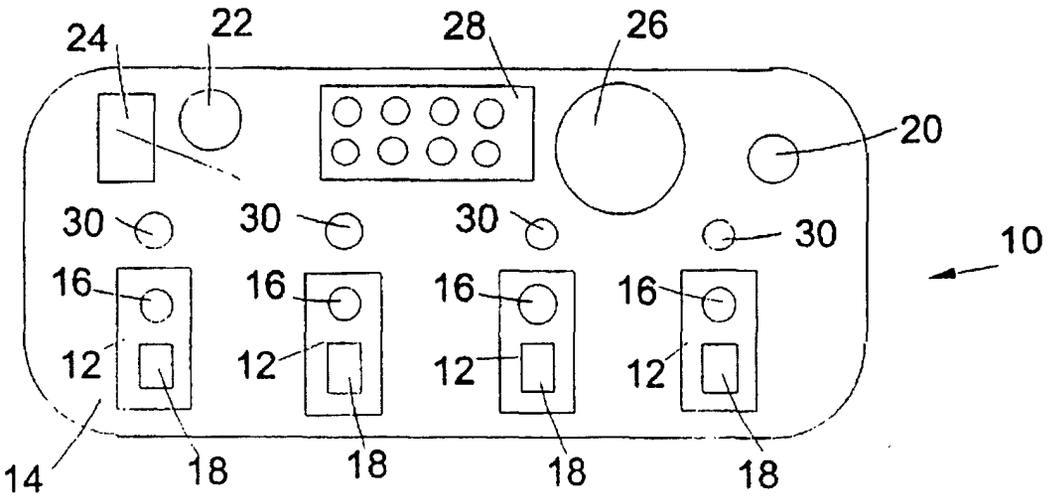

FIGURE 1

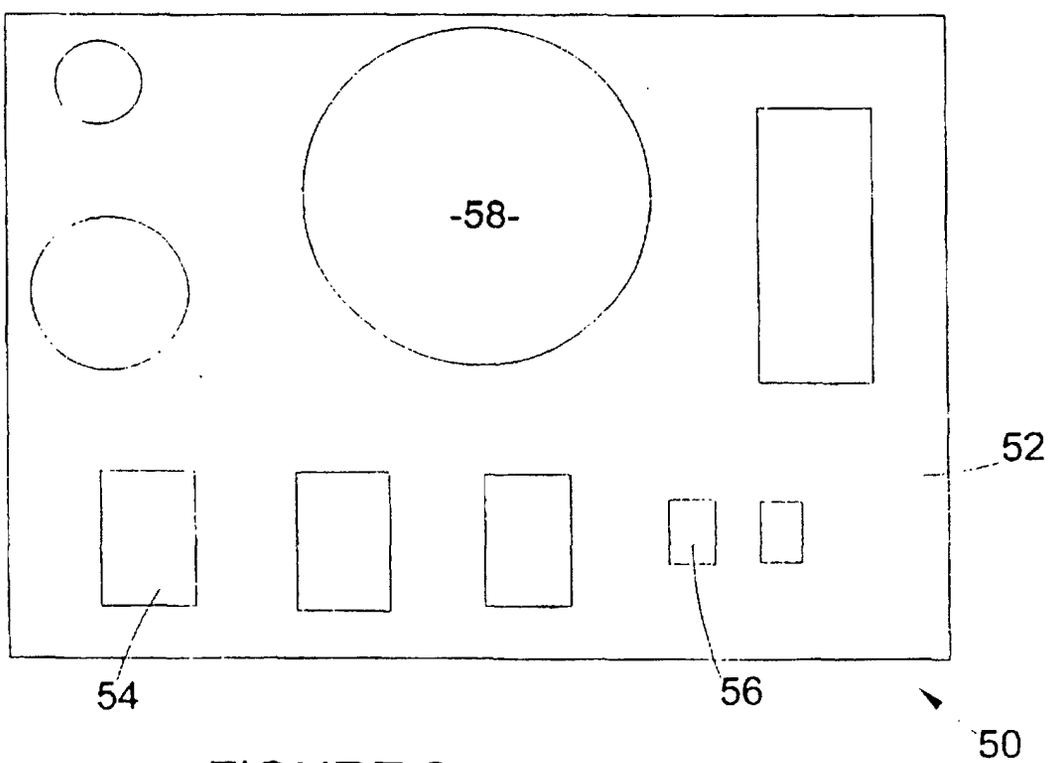

FIGURE 2

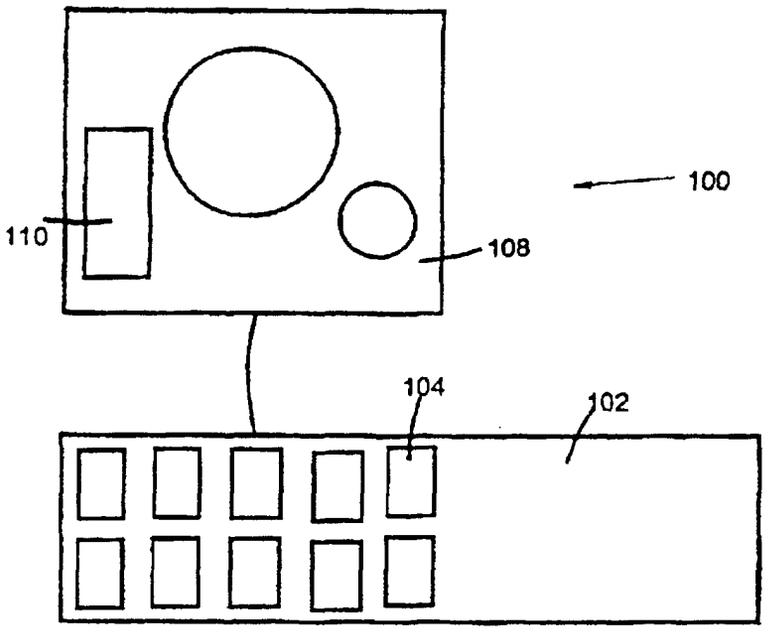

FIGURE 3

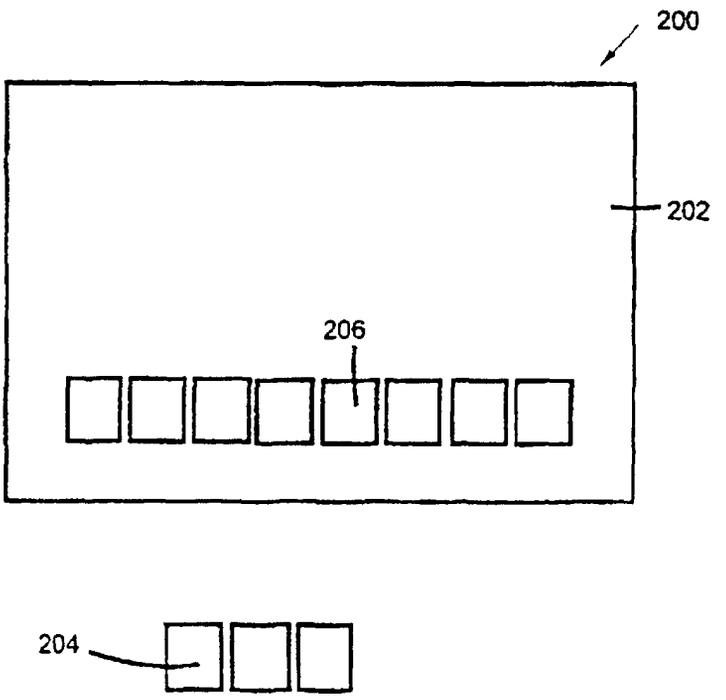

FIGURE 4

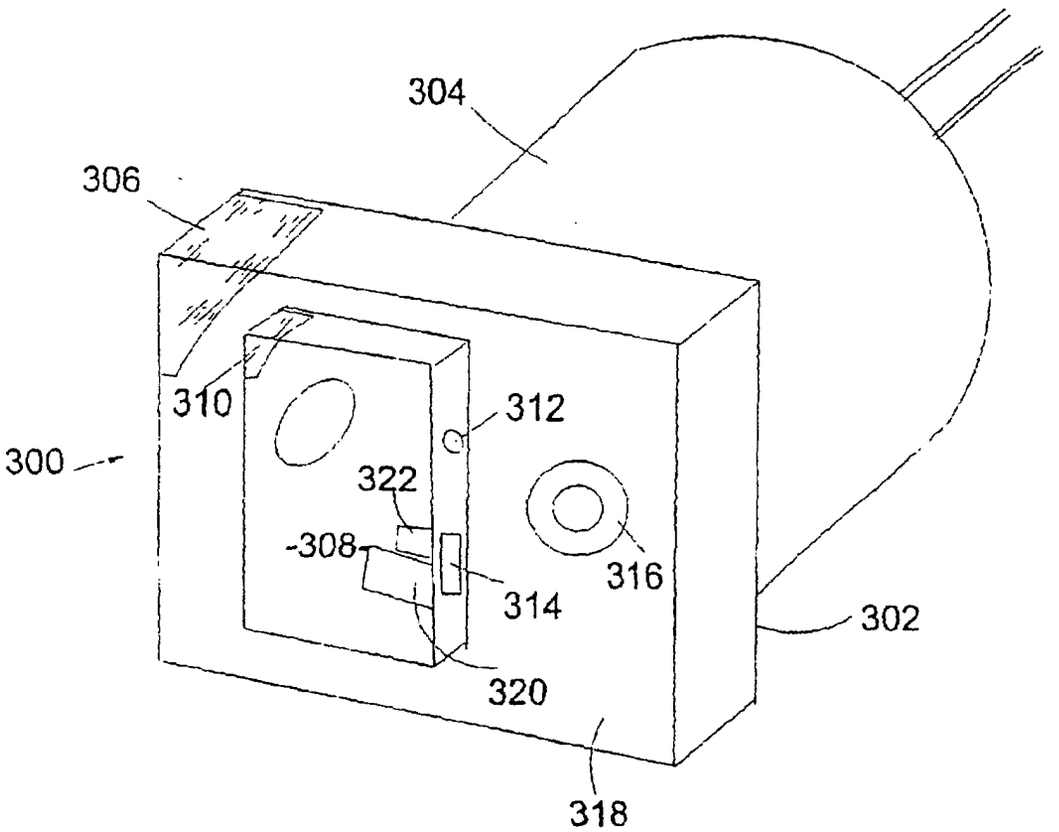

FIGURE 5

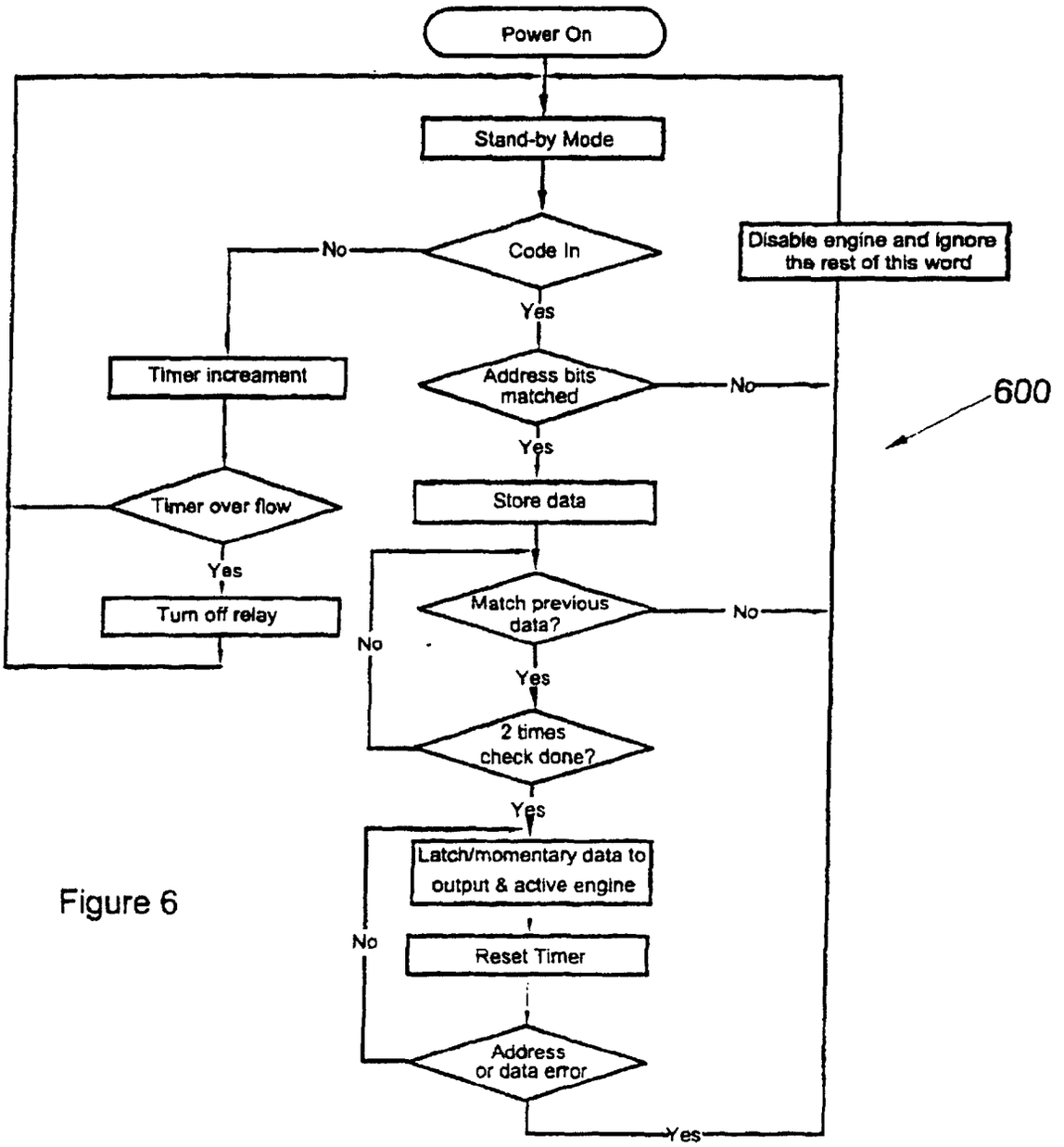
Power On
Stand-by Mode
Code In
No
Disable engine and ignore the rest of this word
Yes
Timer increament
Address bits matched
No
600
Yes
Timer over flow
Store data
Yes
Turn off relay
Match previous data?
No
No
Yes
2 times check done?
Yes
Latch/momentary data to output & active engine
No
Reset Timer
Address or data error
Yes

Figure 6

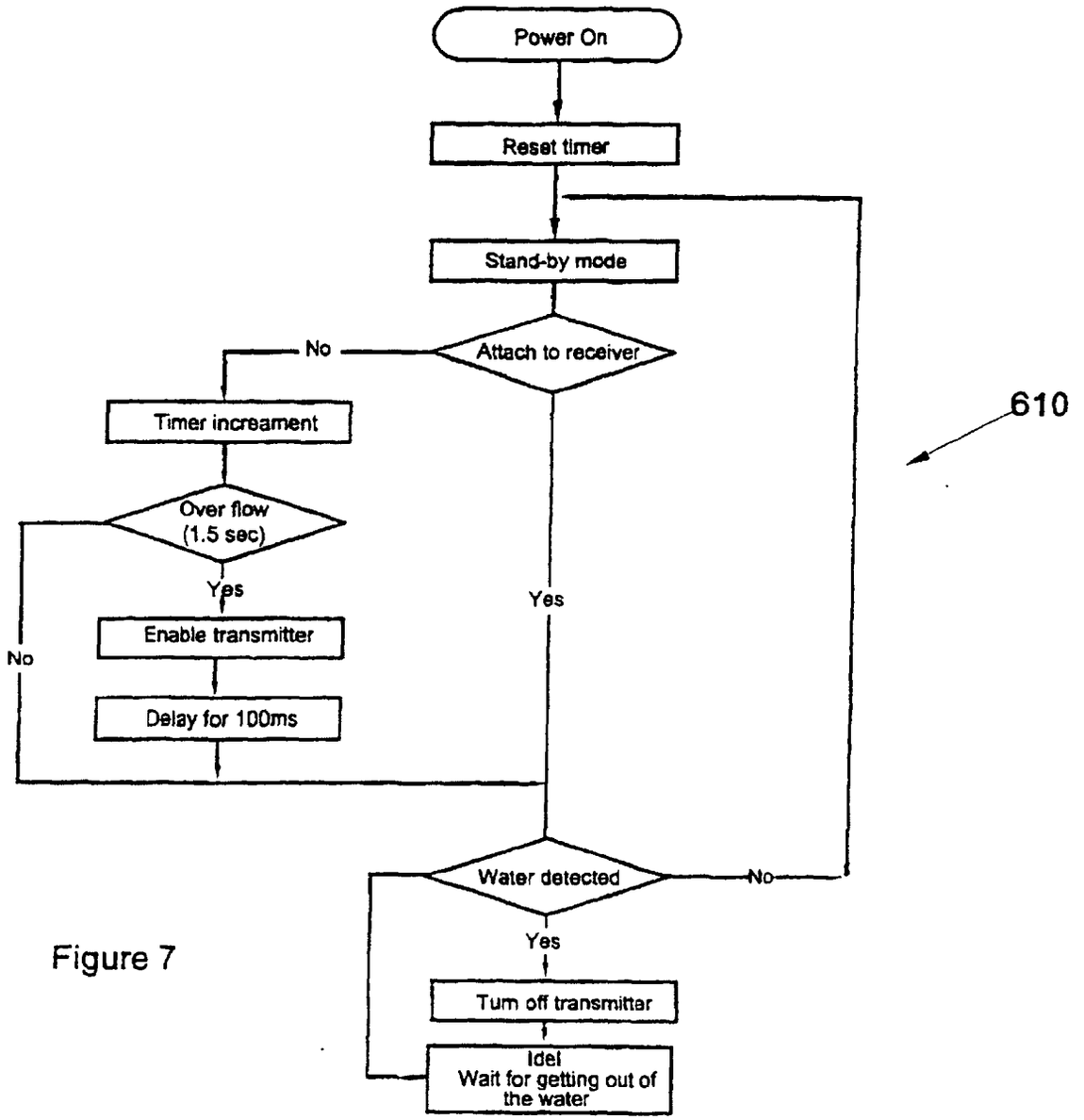
Power On
Reset timer
Stand-by mode
Attach to receiver
No
Yes
Timer increament
Over flow
(1.5 sec)
Yes
No
Enable transmitter
Delay for 100ms
Water detected
No
Yes
Turn off transmitter
Idel
Wait for getting out of
the water
610

Figure 7

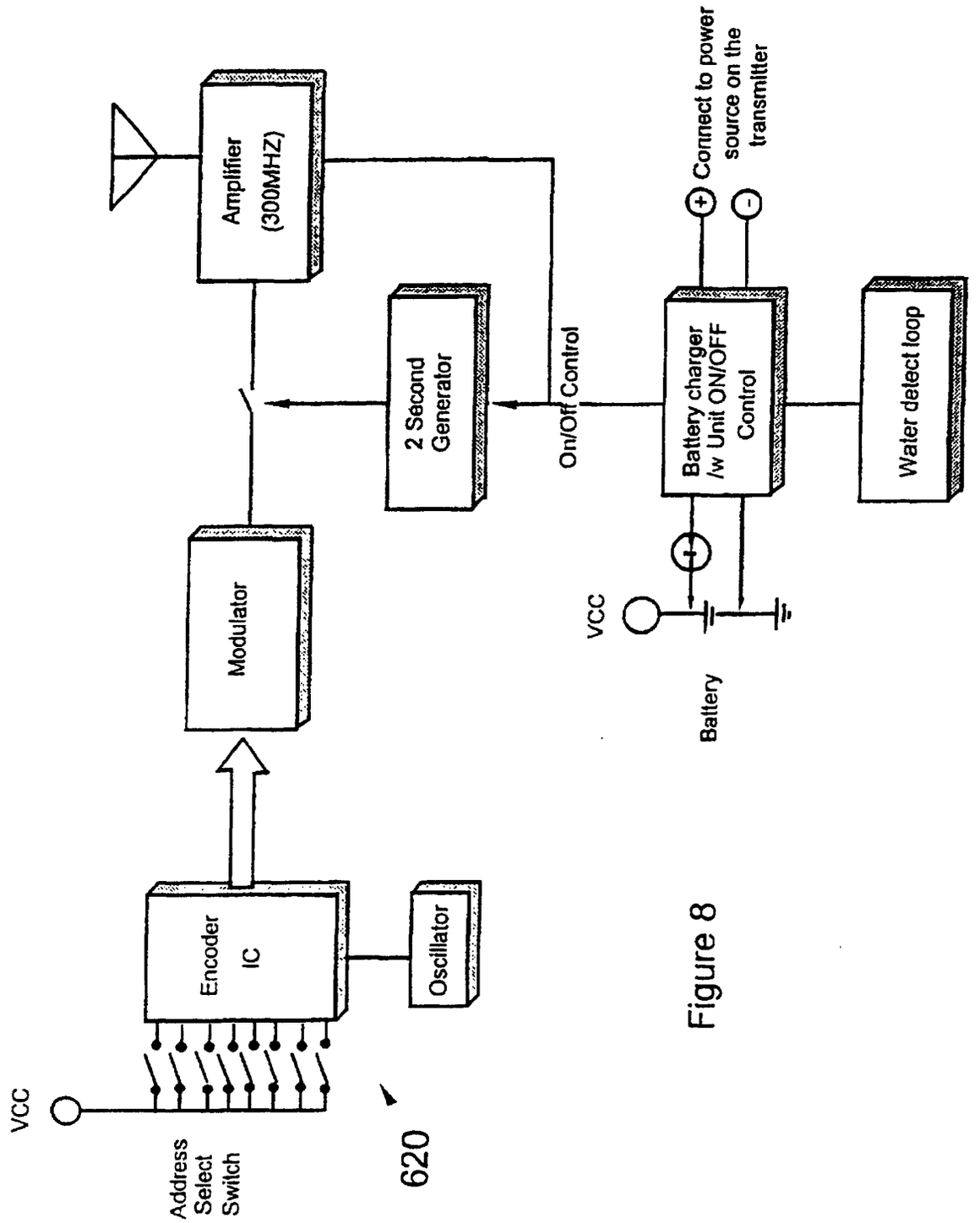
Amplifier
(300MHZ)
Connect to power
source on the
transmitter
2 Second
Generator
On/Off Control
Battery charger
/w Unit ON/OFF
Control
Water detect loop
Modulator
VCC
Battery
Encoder
IC
Oscillator
VCC
Address
Select
Switch
620

Figure 8

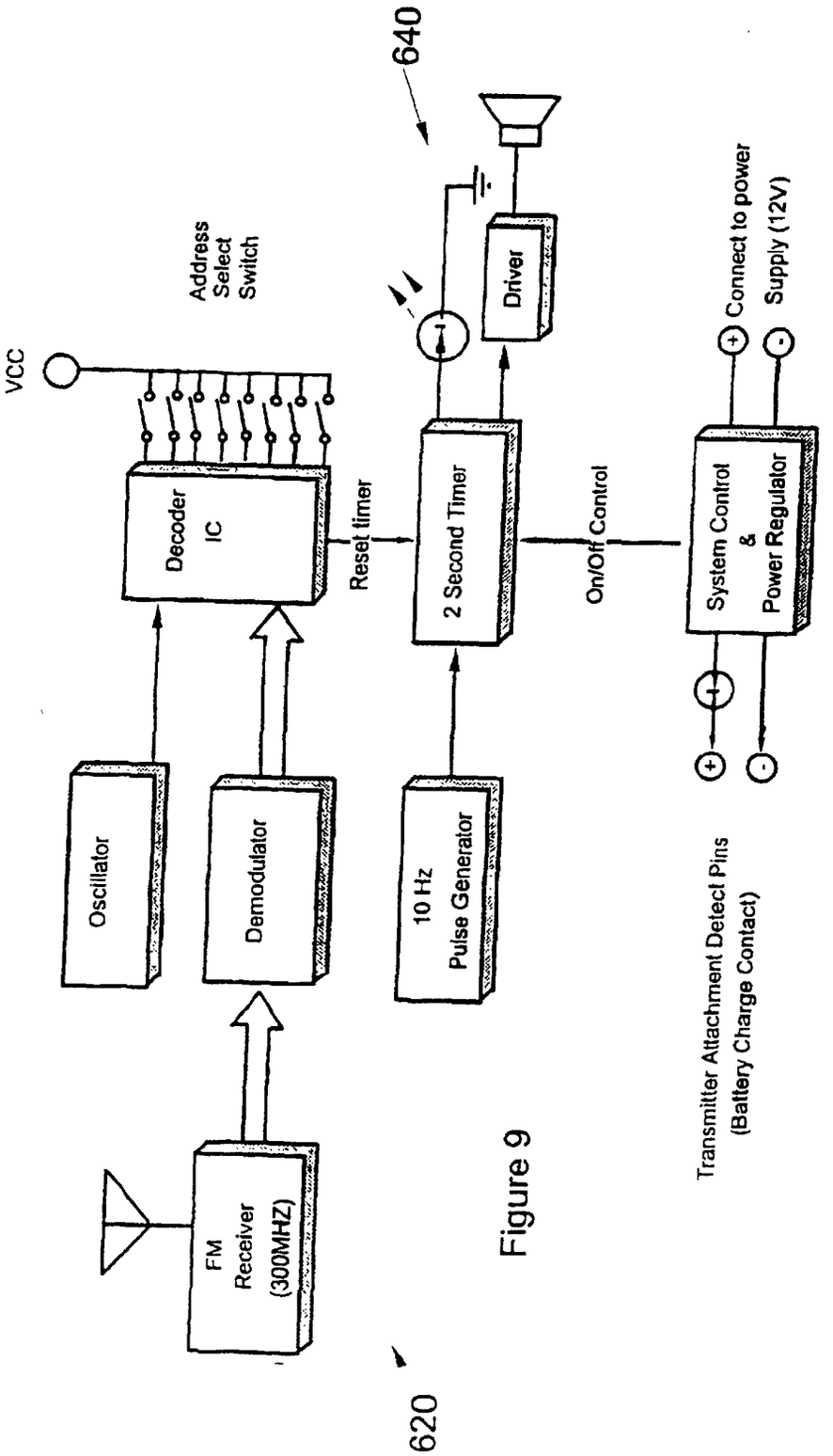
640
620
VCC
Address Select Switch
Decoder IC
Reset timer
2 Second Timer
On/Off Control
Driver
System Control & Power Regulator
Connect to power Supply (12V)
Oscillator
Demodulator
10 Hz Pulse Generator
FM Receiver (300MHZ)
Transmitter Attachment Detect Pins (Battery Charge Contact)

Figure 9