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(54) **Wireless remote-control model**

Drahtloses Fernbedienungsmodell

Modèle de contrôle à distance sans fil

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(56) References cited:  
**WO-A-20/06113687 US-A- 3 832 691  
US-A- 4 160 253**

**EP 1 961 471 B1**

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## Description

### BACKGROUND OF THE INVENTION

#### Field of the Invention

**[0001]** The present invention relates to a wireless remote-control model, and more particularly to a wireless remote-control model that can assure the user safety of the wireless remote-control model employing an electric motor as a motive power source as well as the safety of the wireless remote-control model itself.

#### Description of the Related Art

**[0002]** Wireless controlled models such as remote-control helicopters or vehicles are also known as wireless models or wireless remote controls, not only applied in the area of amateur hobbies, but also used extensively in many industries. Particularly, a wireless remote-control model using electric motor for its motive power (such as an electric wireless remote-control model) generally installs a signal receiver, a servomotor, a speed controller, a gyroscope, an operation control device and a battery serving as a motive power source, used in an operating control machine and a control device for controlling the flying and driving of the wireless remote-control model.

**[0003]** FIG. 5 shows a schematic view of controlling a wireless remote-control model, and FIG. 6 shows a block diagram of a control module of a wireless remote-control model as depicted in FIG. 5. In these figures, a wireless remote-control helicopter is used as an example for illustrating a wireless remote-control model that uses an electric motor as its motive power source. In FIG 5, the wireless remote-control helicopter 100 is operated and controlled by a signal transmitter 1. The wireless remote-control helicopter 100 installs a signal receiver 2, a control module 3, a battery 27 and an electric motor or a servomotor (not shown in the figure).

**[0004]** In FIG. 6, the signal receiver 2 includes a signal receiving portion 2A and a decoder 2B, and the control module 3 has a control portion 31 or a memory 32 for storing a control parameter, and a steering servomotor 8, 9. A power motor 7 drives a servomotor 8, 9 according to an operating control instruction signal received from a signal transmitter 1 by a receiving antenna 17 for controlling a collective pitch, a rudder, an elevating rudder, and an aileron, and the steering portion 18, 19 is controlled for the flying, elevating or circling of a wireless remote-control helicopter.

**[0005]** At the position of the signal transmitter 1, a joystick 20, 21, a display device 22, a signal transmitting antenna 304, a channel selector 307, 308 and other switches 24, 25 are installed, so that the operating control information or the setup characteristics of a carrying machine can be displayed visually. The operating control information transmitted from the signal transmitter 1 is

received by the signal receiver 1, and the signal receiving portion 2A is used for amplifying and detecting the RF waves, and the decoder 2B is used for decoding. The decoded operating control information (or operating control instruction signal) of the control module 3 is stored as a control parameter (or operating control characteristic parameter) in the memory 32 for driving a servomotor 8, 9 to control a steering portion 18, 19 that drives the power motor 7, collective pitch, rudder, elevating rudder or aileron.

**[0006]** The wireless remote-control model that uses an electric motor as its motive power source is disclosed in a patent literature 1 (Japan Patent Laid Open Publication No. 10-290888 of Patent Gazette). Although there may be different types of wireless remote-control models, a wireless control device with a non-starting engine when the required conditions are not satisfied, has been disclosed in a patent literature 2 (Japan Patent Laid Open Publication No. 11-124295 of Patent Gazette), and a patent literature 3 (US-A-3832691).

#### Summary of the Invention

**[0007]** As the popularity and performance of a wireless remote-control model that uses an electric motor as its motive power source improve increasingly, the output of the electric motor becomes larger, and the energy capacity of the battery also becomes larger. In addition, more and more users or operators having little knowledge or not familiar with the wireless remote-control model, and thus it is necessary to assure the safety of the electric motor with a large output as well as the safety of the battery with a large energy capacity. If an operating control device of its control device installed on a wireless remote-control model has problems, then serious failure of the flying or driving of the wireless remote-control model may occur.

**[0008]** It is a primary objective of the present invention to provide a wireless remote-control model that can assure the safety of an operator (or a user) as well as the safety of the wireless remote-control model itself.

**[0009]** To achieve the foregoing objective, the present invention provides a wireless remote-control model, comprising a signal receiver, a detector portion, a control module, a power motor, a servomotor, a battery, a start pushbutton and a buzzer. The signal receiver comprises: a signal receiving circuit, for receiving an operating control instruction signal transmitted from a signal transmitter via electric waves; and a decoder, for decoding the received operating control instruction signal. The detector portion comprises a current detector, a voltage detector and a temperature detector for detecting the current, voltage and temperature of the battery respectively, a rotation detector for detecting the rotation of the power motor, and an angular speed detector for detecting the rotation angle of the servomotor and the angular speed of the frame body.

**[0010]** The control module comprises a central control

portion, and a memory having a control parameter storage area. The central control portion comprises: a centralized control portion, for detecting a detection signal by using a detector portion and a control parameter stored in the memory, and the decoder is used for decoding an operating control instruction signal, and generating an operating control signal, and the operating control signal is applied to the power motor and the servomotor for the control and operation; a safety management portion, for determining a normal/abnormal condition of a power motor, a servomotor and a battery according to the detection signal detected by the detector portion; and a buzzer control portion, for according to the determination result of the safety management portion, for providing a plurality of modes of buzz signals to the buzzer.

**[0011]** The safety management portion includes a determination portion, such that a first mode buzz signal instruction is sent to the buzzer control portion for indicating that the battery is connected to the determination portion correctly; a second mode buzz signal instruction is sent to the buzzer control portion for indicating that the operation is started, when the battery is connected correctly and a start pushbutton is pressed during an examination period; and a third mode buzz signal instruction is sent to the buzzer control portion for indicating that the power motor is at a driving idle state, when the examination determines a normal condition.

**[0012]** The buzzer issues a first mode buzz, a second mode buzz and a third mode buzz according to each mode buzz of the determination portion of the safety management portion.

**[0013]** In the present invention, the first mode buzz is a heavy continuous sound, the second mode buzz is a simulated engine starter sound, and the third mode buzz is a simulated engine idling sound, so that if an internal combustion engine used for driving the wireless remote-control model has the same touch feeling, and the invention can enhance the safety even for a wireless remote-control model that adopts a silent and stable electric motor as the motive power source.

**[0014]** The memory has a history storage area, for recording the determination result of the safety management portion into the history storage area for making the replacement of components and the maintenance of the wireless remote-control model more easily.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0015]**

FIG. 1 is a block diagram of a control system of a wireless remote-control model in accordance with a first preferred embodiment of the present invention;

FIG. 2 is a flow chart of determining a normal/abnormal control of a control system as depicted in FIG 1;

FIG. 3 is a flow chart of a control sequence of flying or stopping a wireless remote-control helicopter;

FIG. 4 is a schematic view of a wireless remote-control helicopter used as an example for illustrating a wireless remote-control model of the present invention;

FIG. 5 is a schematic view of controlling a wireless remote-control model; and

FIG. 6 is a block diagram of a control module of a wireless remote-control model as depicted in FIG. 5.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0016]** Refer to FIG. 1 for a block diagram of a control system of a wireless remote-control model in accordance with a first preferred embodiment of the present invention, the numeral 1 stands for a signal transmitter, 2 for a signal receiver, 2A for a signal receiving portion (RF amplification and wave detection), 2B for a decoder, 3 for a control module, 31 for a central control device, 311 for a centralized control portion, 312 for a safety management portion, 313 for a buzzer control portion, 314 for a determination portion, 32 for a memory, 321 for a set value storage portion, 322 for a history storage portion. The detector portion 4 includes a current detector 41, a voltage detector 42, a temperature detector 43, a rotation detector 44, a rotary angle detector 45 and an angular speed detector 46. Another appropriate detector such as acoustic radar or electric wave radar can be used as well.

**[0017]** Further a power motor 7 is installed at the position of a control module 3 for controlling a servomotor 8, 9, 10 of a steering portion and a battery 27. The numeral 5 stands for a start switch, and 6 stands for a buzzer. The start switch 5 is a main switch for controlling the status of a wireless remote-control helicopter. If the start switch 5 is pressed and secured to an ON status, electric power will be supplied to the carrying machine, for detecting each part of a safety management portion 312 and determine a normal/abnormal condition of a determination portion 314. The buzzer 6 will issue a first mode buzz, a second mode buzz and a third mode buzz according to the determination of the determination portion 314.

**[0018]** In this embodiment, the current detector 41, voltage detector 42 and temperature detector 43 are detectors for detecting the current, voltage and temperature of a battery respectively. The rotation detector 44 is provided for detecting the rotation of an output shaft of a power motor. The rotary angle detector 45 and the angular speed detector are detectors for detecting a steering angle and a rotation angle of an operation of a servomotor and an angular speed of a frame body respectively, but the above can be measured by the number of

driving pulses and pulse width of the servomotor. The servomotor is installed at a position of controlling flying such as the position of a collective pitch, a rudder, an elevating rudder or an aileron.

**[0019]** Before or after the flying of a wireless remote-control helicopter 100, a personal computer (PC) 200 can be used for changing and modifying a control parameter setting, and the changed or modified control parameter setting is stored into the set value storage portion 321 of the memory 32 installed in the wireless remote-control helicopter 100. In this operation, a communication line is connected to a connector 33 for transmitting the control parameter settings from the personal computer 200. Therefore, the driving characteristics of the power motor such as the operating characteristics of a collective pitch, a rudder, an elevating rudder and an aileron are stored as control parameter settings in the memory 32.

**[0020]** During the periods of the power motor 7 of the wireless remote-control helicopter 100 starts rotating for a take-off, flying and landing, and each control signal of the operating control instruction signal transmitted from the signal transmitter 1 is modulated and received by the signal receiver 2 of the wireless remote-control helicopter 100. The received modulated wave is detected in the signal receiver, and the decoder 3 is used for decoding, and various operating control instruction signals are regenerated. The regenerated operating control instruction signals are centralized in a control circuit 311, and generated respectively according to the setting (or a setup characteristic of a control parameter) stored in a set value storage portion 321 of the memory 32.

**[0021]** Referring to FIG. 2 for a flow chart of determining a normal/abnormal control of a control system as depicted in FIG. 1, the battery is installed, and the start pushbutton is pressed until the determination is produced. The time required for the normal/abnormal determination depends on the movement speed/processing speed of the installed detector or the central control portion (CPU or microprocessor). In actual practice, all detectors must be normal and require sufficient time for the determination. The sequence of the determination is described as follows.

**[0022]** Firstly, when the battery is installed to the wireless remote-control helicopter and electrically connected to an electric system (Step 1, which is referred to as "P-1"), and then the safety management portion 312 will detect such connection and instructs the buzzer control portion 313 to buzz. The buzzer 6 issues a first mode buzz (P-2). The first mode buzz informs the operator about the situation of the battery being connected and electrically conducted with an operating control system. The buzz is preferably a heavy continuous sound, but a continuous sound around 1kHz with a very sensitive hearing frequency can be used for a noisy environment. However, the present invention is not limited to such arrangement. In addition, the sound volume of the buzzer can be adjusted, and the sound alarm device is not limited to the buzzer only, but a loudspeaker and/or an LED lamp

can be used for improve the alert.

**[0023]** If-the start switch 5 is pressed and held till it is ON, the buzzer 6 will switch to a second mode buzz (P-4). When the start switch 5 is switched ON, each portion is examined according to the detection signal detected by a detector in the detector portion 4 (P-5). During the examination period, the number (n) of detectors, and the processing time of the safety management portion 312 and its determination portion 314 are detected. In the examination, the buzzer 6 will continue issuing the second mode buzz. The second mode buzz is preferably a simulated engine starter sound, so that the same touch feeling of the wireless remote-control model that uses an internal combustion engine as its motive power is provided to the operator to generate a tense feeling. Further, this abnormal determination information is stored in a memory 32 of the history storage portion 322 as shown in FIG. 1, so that records can be stored in the history storage portion 322, and this structure can be used for maintenance at a later time. The invention is not limited to this second mode buzz only, but any other appropriate buzz can be used as well.

**[0024]** During the examination, if the condition is determined to be abnormal (such as the voltage of the battery is lower than a predetermined value) (P-6), the examination will be interrupted (P-7). Now, the buzzer 6 will return to the first mode buzz for its buzz. The buzzer 6 will maintain the second mode buzz, until the abnormal condition is determined to be eliminated. The interrupt of an examination may not be used, but a certain abnormal condition is indicated by returning the buzz to the first mode buzz after the whole examination is completed.

**[0025]** If the examination for determining a predetermined number (n) of examination items (+1) to be normal (P-8), the buzzer 6 will switch to a third mode buzz (P-9). The third mode buzz is preferably a simulated idling sound of a wireless remote-control model that uses an internal combustion engine as its motive power. In other words, if a signal for starting the flying from the signal transmitter, the signal is an alarm signal indicating that the power motor is ready to start rotating or situated at a take-off state (or an idle state).

**[0026]** In the idle state, a signal for starting the flight (or starting a power motor) is received from the signal transmitter, such that the flying starts or a start signal of shutting the power motor stops the flying. The start pushbutton is pressed again to return to the status of turning on a battery. Referring to FIG. 3 for a flow chart of a control sequence of flying or stopping a wireless remote-control helicopter, a start switch of the signal transmitter is turned ON (P-10). The safety management portion 312 determines an idle state as illustrated in FIG. 2 (P-11). The power motor 7 starts rotating, and the buzzer 6 becomes OFF (P-12). If the elevating instruction signal from the signal transmitter (or a rotation speed increase signal of the power motor 7) is received, the wireless remote-control helicopter will elevate, and various operating control signals transmitted from the signal transmitter are

used for different ways of flying.

**[0027]** A landing instruction signal from the signal transmitter is received for landing the wireless remote-control helicopter, and a rotation stop instruction of the power motor 7 stops the power motor 7 (P-14). If the power motor 7 stops, the buzzer 6 will be situated at an idle state (In other words, the buzzer 6 buzzes a third mode buzz) (P-15). When the third mode buzz is outputted and a determination of flying the helicopter again is made, the start switch of the signal transmitter is turned ON (P-10), and the same procedure as described above will be performed. In addition, if determination for not flying again is made in (P-15), the start pushbutton is turned OFF. Now, the buzzer 6 will return to the first mode buzz for its buzz. If the battery is removed, the buzzer 6 will stop. If the start pushbutton is not switched to OFF within a predetermined time, the power will be disconnected automatically.

**[0028]** Referring to FIG 4 for a schematic view of a wireless remote-control helicopter used as an example for illustrating a wireless remote-control model of the present invention, the wireless remote-control helicopter 100 comprises a power motor 7, a battery 27, a servomotor 8, 9, 10 and a signal receiver 2 installed in a frame body, and an operating mechanism having a control module 3, a detector portion 4 and a gyroscope.

**[0029]** The frame body installs a main rotor 13 and a landing gear 16, and the axial shaft 14 installs a tail rotor 15. The operating mechanism or the power motor is triggered by a start pushbutton, and an operating control instruction received from an antenna 17 is used for controlling an operating mechanism for the flight. The buzzer 6 as described above buzzes with the first, second and third mode buzzes, wherein the numeral 12 stands for a light emitting diode (or an indicating lamp), which will be lit when power is supplied to the carrying machine.

**[0030]** In summation of the description above, the safety of the operators as well as the safety of the wireless remote-control model can be achieved. The present invention is not limited to a wireless remote-control helicopter, but the invention can be applied to any fixed-wing wireless control airplane, wireless remote-control car, wireless remote-control boat, and various wireless remote-control models as well.

## Claims

1. A wireless remote-control model, comprising a signal receiver (2), a detector portion (4), a control module (3), a power motor (7), a servomotor (8,9,10), a battery (27), a start pushbutton and a buzzer (6), wherein:

said signal receiver (2) comprises: a signal receiving circuit (2A), for receiving an operating control instruction signal transmitted from a signal transmitter (1) by electric waves; and a de-

coder (2B), for decoding said operating control instruction signal from a received signal; said detector portion (4) comprises: a current detector (41), a voltage detector (42) and a temperature detector (43) for detecting the current, voltage and temperature of said battery (27) respectively, a rotation detector (44) for detecting the rotation of said power motor, and a rotary angle detector (45) for detecting the rotary angle and the angular speed of said servomotor (8,9,10);

said control module (3) comprises: a central control device (31), and a memory (32) having a control parameter storage area;

said central control device (31) comprises:

a centralized control portion (311), for detecting a detection signal by using said detector portion (4), a control parameter stored in said memory (32), and an operating control instruction signal decoded by said decoder, and generating an operating control signal, and applying the operating control signal for controlling and operating said power motor and said servomotor (8,9,10);

a safety management portion (312), for performing a normal/abnormal determination for said power motor, said servomotor (8,9,10) and said battery (27) according to a detection signal detected by said detector portion (4); and a buzzer control portion (313), for providing a plurality of modes of buzz signals to the said buzzer (6) according to the determination result of said safety management portion (312);

wherein, said safety management portion (312) includes a determination portion (314), such that if said determination portion (314) is connected correctly to said battery (27), a first mode buzz signal instruction is sent to said buzzer control portion (313) for indicating the connected battery;

if said battery (27) is connected correctly and said start pushbutton is pressed during an examination period, a second mode buzz signal instruction is sent to said buzzer control portion (313) for indicating a start operation;

if the determination of said examination is normal, a third mode buzz signal instruction is sent to said buzzer control portion (313) for indicating a driving idle state of said power motor;

said buzzer (6) is adapted for issuing a first mode buzz, a second mode buzz and a third mode buzz according to said each mode buzz signal instruction of said determination

portion of said safety management portion.

2. The wireless remote-control model of claim 1, wherein said first mode buzz is a heavy continuous sound, said second mode buzz is a simulated engine starter sound, and said third mode buzz is a simulated engine idling sound. 5
3. The wireless remote-control model of claim 1, wherein said memory (32) includes a history storage area (322), for storing a determination result of said safety management portion (312) into said history storage area. 10

## Patentansprüche

1. Drahtloses Fernsteuermodell mit einem Signalempfänger (2), einem Detektorabschnitt (4), einem Steuermodul (3), einem Leistungsmotor (7), einem Servomotor (8, 9, 10), einer Batterie (27), einem Start-Druckknopf und einem Tongeber (6), wobei: 15 20

der Signalempfänger (2) eine Signalempfangsschaltung (2A) zum Empfang eines mittels elektrischer Wellen von einem Signalsender (1) ausgesandten Betriebssteuer-Anweisungssignals und einen Decoder (2B) zum Decodieren des Betriebssteuer-Anweisungssignals aus einem empfangenen Signal enthält, 25 30  
 der Detektorabschnitt (4) einen Stromdetektor (41), einen Spannungsdetektor (42) und einen Temperaturdetektor (43) zum entsprechenden Erfassen des Stroms, der Spannung und der Temperatur der Batterie (27) sowie einen Drehdetektor (44) zum Erfassen der Drehung des Leistungsmotors und einen Drehwinkeldetektor (45) zum Erfassen des Drehwinkels und der Drehgeschwindigkeit des Servomotors (8, 9, 10) enthält, 35 40  
 das Steuermodul (3) eine Zentralsteuervorrichtung (31) und einen Speicher (32) mit einem Steuerparameter-Speicherbereich enthält, die Zentralsteuervorrichtung (31) Folgendes umfasst: 45

einen zentralisierten Steuerabschnitt (311) zum Erfassen eines Erfassungssignals unter Verwendung des Detektorabschnitts (4), eines im Speicher (32) gespeicherten Steuerparameters, und eines vom Decoder decodierten Betriebssteuer-Anweisungssignals und zum Erzeugen eines Betriebssteuersignals und Anwenden des Betriebssteuersignals zum Steuern und Betreiben des Leistungsmotors und des Servomotors (8, 9, 10), 50 55  
 einen Sicherheitsverwaltungsabschnitt

(312) zum Ausführen einer Normal-/Störungsbestimmung für den Leistungsmotor, den Servomotor (8, 9, 10) und die Batterie (27) entsprechend einem vom Detektorabschnitt (4) erfassten Erfassungssignal, und einen Tongeber-Steuerabschnitt (313) zum Liefern mehrerer Arten von Tonsignalen an den Tongeber (313) entsprechend dem Bestimmungsergebnis des Sicherheitsverwaltungsabschnitts (312), wobei der Sicherheitsverwaltungsabschnitt (312) einen Bestimmungsabschnitt (314) beinhaltet, damit dann, wenn dieser korrekt mit der Batterie (27) verbunden ist, eine Anweisung für ein Tonsignal erster Art an den Tongeber-Steuerabschnitt (313) gesandt wird, um die verbundene Batterie anzuzeigen, wenn während einer Prüfzeitspanne der Start-Druckknopf gedrückt wird und die Batterie (27) richtig verbunden ist, eine Anweisung für ein Tonsignal zweiter Art an den Tongeber-Steuerabschnitt (313) gesandt wird, um den Startbetrieb anzuzeigen, und wenn die Prüfung eine normale Bestimmung ergibt, eine Anweisung für ein Tonsignal dritter Art an den Tongeber-Steuerabschnitt (313) gesandt wird, um einen Leerlaufzustand des Leistungsmotors anzuzeigen, und der Tongeber (6) zur Abgabe eines Tons erster Art, eines Tons zweiter Art und eines Tons dritter Art entsprechend der Anweisung für die jeweilige Art des Tonsignals des Bestimmungsabschnitts des Sicherheitsverwaltungsabschnitts eingerichtet ist.

2. Drahtloses Fernsteuermodell nach Anspruch 1, wobei der Ton erster Art ein zusammenhängender schwerer Klang, der Ton zweiter Art ein simulierter Motoranlassklang und der Ton dritter Art ein simulierter Motorleerlaufklang ist.
3. Drahtloses Fernsteuermodell nach Anspruch 1, wobei der Speicher (32) einen Verlaufsspeicherbereich (322) zum Einspeichern eines Bestimmungsergebnisses des Sicherheitsverwaltungsabschnitts (312) aufweist.

## Revendications

1. Module de commande à distance sans fil, comportant un récepteur de signal (2), une partie de détection (4), un module de commande (3), un moteur de puissance (7), un servomoteur (8, 9, 10), une batterie (27), un bouton-poussoir de démarrage et un vibreur sonore (6), dans lequel :

ledit récepteur de signal (2) comporte : un circuit de réception de signal (2A), pour recevoir un signal d'instruction de commande de fonctionnement transmis par un émetteur de signal (1) par l'intermédiaire d'ondes électriques, et un décodeur (2B), pour décoder ledit signal d'instruction de commande de fonctionnement d'un signal reçu, 5  
 ladite partie de détection (4) comporte : un détecteur de courant (41), un détecteur de tension (42) et un détecteur de température (43) pour détecter le courant, la tension et la température de ladite batterie (27) respectivement, un détecteur de rotation (44) pour détecter la rotation dudit moteur de puissance, et un détecteur d'angle de rotation (45) pour détecter l'angle de rotation et la vitesse angulaire dudit servomoteur (8, 9, 10), 10  
 ledit module de commande (3) comporte : un dispositif de commande centrale (31), et une mémoire (32) ayant une zone de mémorisation de paramètre de commande, 15  
 ledit dispositif de commande centrale (31) comporte :

une partie de commande centralisée (311), pour détecter un signal de détection en utilisant ladite partie de détection (4), un paramètre de commande mémorisé dans ladite mémoire (32) et un signal d'instruction de commande de fonctionnement décodé par ledit décodeur, et générer un signal de commande de fonctionnement, et appliquer le signal de commande de fonctionnement pour commander et faire fonctionner ledit moteur de puissance et ledit servomoteur (8, 9, 10), 20  
 une partie de gestion de sécurité (312), pour effectuer une détermination normale/anormale pour ledit moteur de puissance, ledit servomoteur (8, 9, 10) et ladite batterie (27) conformément à un signal de détection détecté par ladite partie de détection (4), et 25  
 une partie de commande de vibreur sonore (313), pour délivrer une pluralité de modes de signaux de vibration sonore audit vibreur sonore (313) conformément au résultat de détermination de ladite partie de gestion de sécurité (312), 30  
 dans lequel, ladite partie de gestion de sécurité (312) inclut une partie de détermination (314), de sorte que si ladite partie de détermination (314) est connectée correctement à ladite batterie (27), une première instruction de signal de vibreur sonore de mode est envoyée à ladite partie de commande de vibreur sonore (313) pour indiquer la batterie connectée, 35  
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 45  
 50  
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si ladite batterie (27) est connectée correctement et que l'on appuie sur ledit bouton-poussoir de démarrage pendant une période d'examen, une deuxième instruction de signal de vibreur sonore de mode est envoyée à ladite partie de commande de vibreur sonore (313) pour indiquer une opération de démarrage, 5  
 si la détermination dudit examen est normale, une troisième instruction de signal de vibreur sonore de mode est envoyée à ladite partie de commande de vibreur sonore (313) pour indiquer un état inactif d'entraînement dudit moteur de puissance, 10  
 ledit vibreur sonore (6) est adapté pour émettre une première vibration sonore de mode, une deuxième vibration sonore de mode et une troisième vibration sonore de mode conformément à chacune desdites instructions de signal de vibration sonore de mode de ladite partie de détermination de ladite partie de gestion de sécurité. 15

2. Modèle de commande à distance sans fil selon la revendication 1, dans lequel ladite première vibration sonore de mode est un son continu lourd, ladite seconde vibration sonore de mode est un son de démarrage de moteur simulé, et ladite troisième vibration sonore de mode est un son de régime de ralenti de moteur simulé. 25
3. Modèle de commande à distance sans fil selon la revendication 1, dans lequel ladite mémoire (32) inclut une zone de mémorisation d'historique (322), pour mémoriser un résultat de détermination de ladite partie de gestion de sécurité (312) dans ladite zone de mémorisation d'historique. 30  
 35  
 40  
 45  
 50  
 55

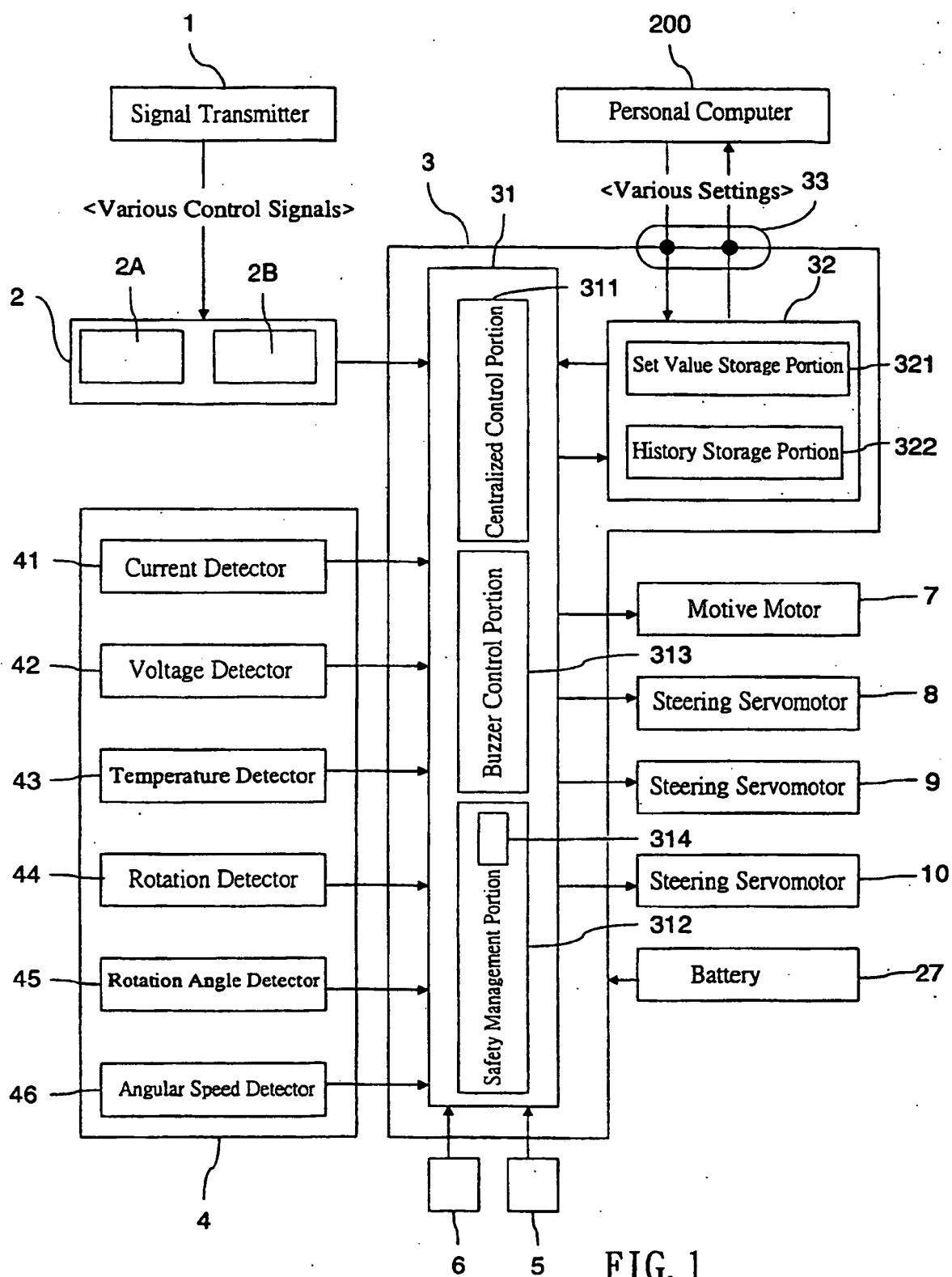


FIG. 1



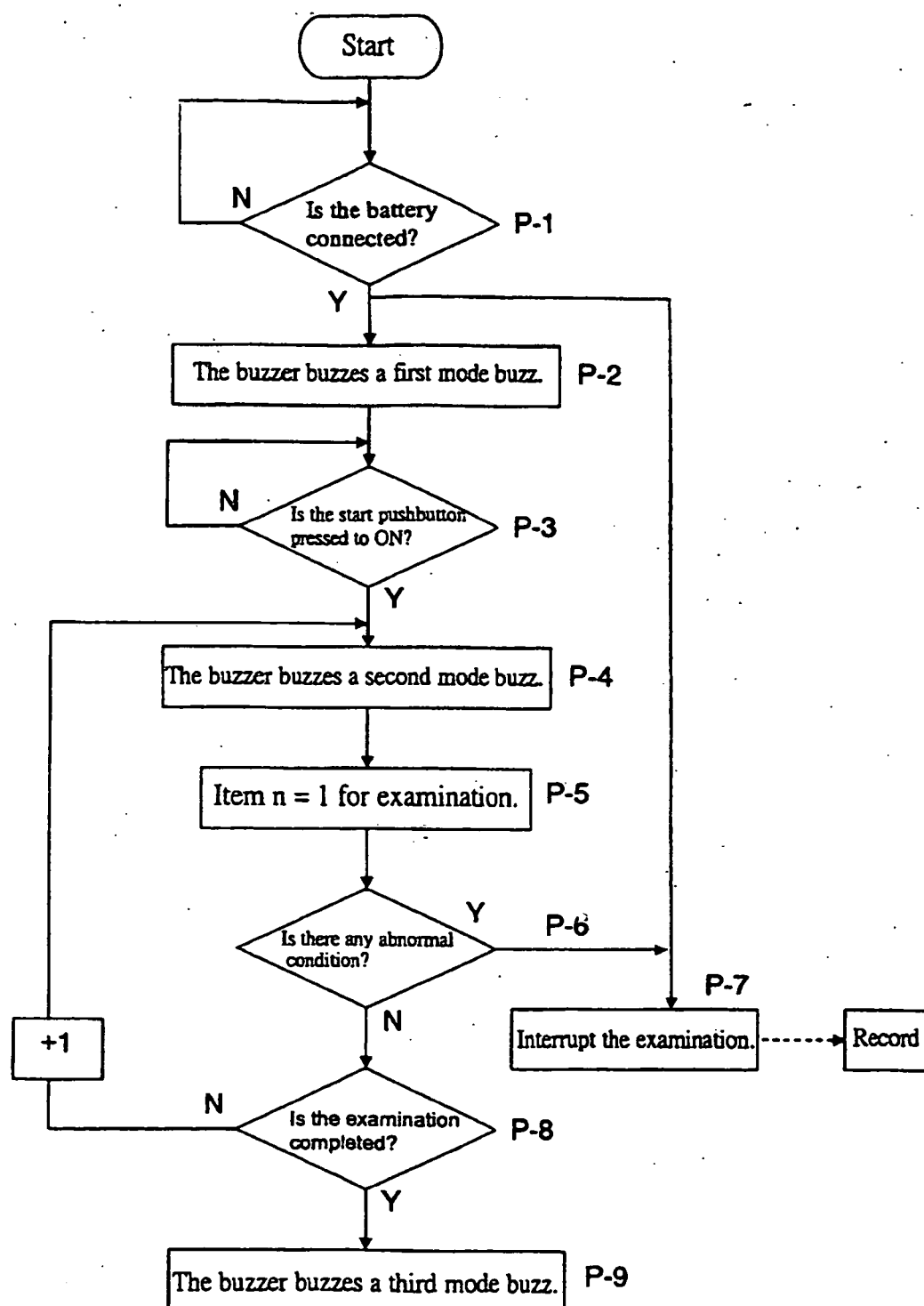


FIG. 2

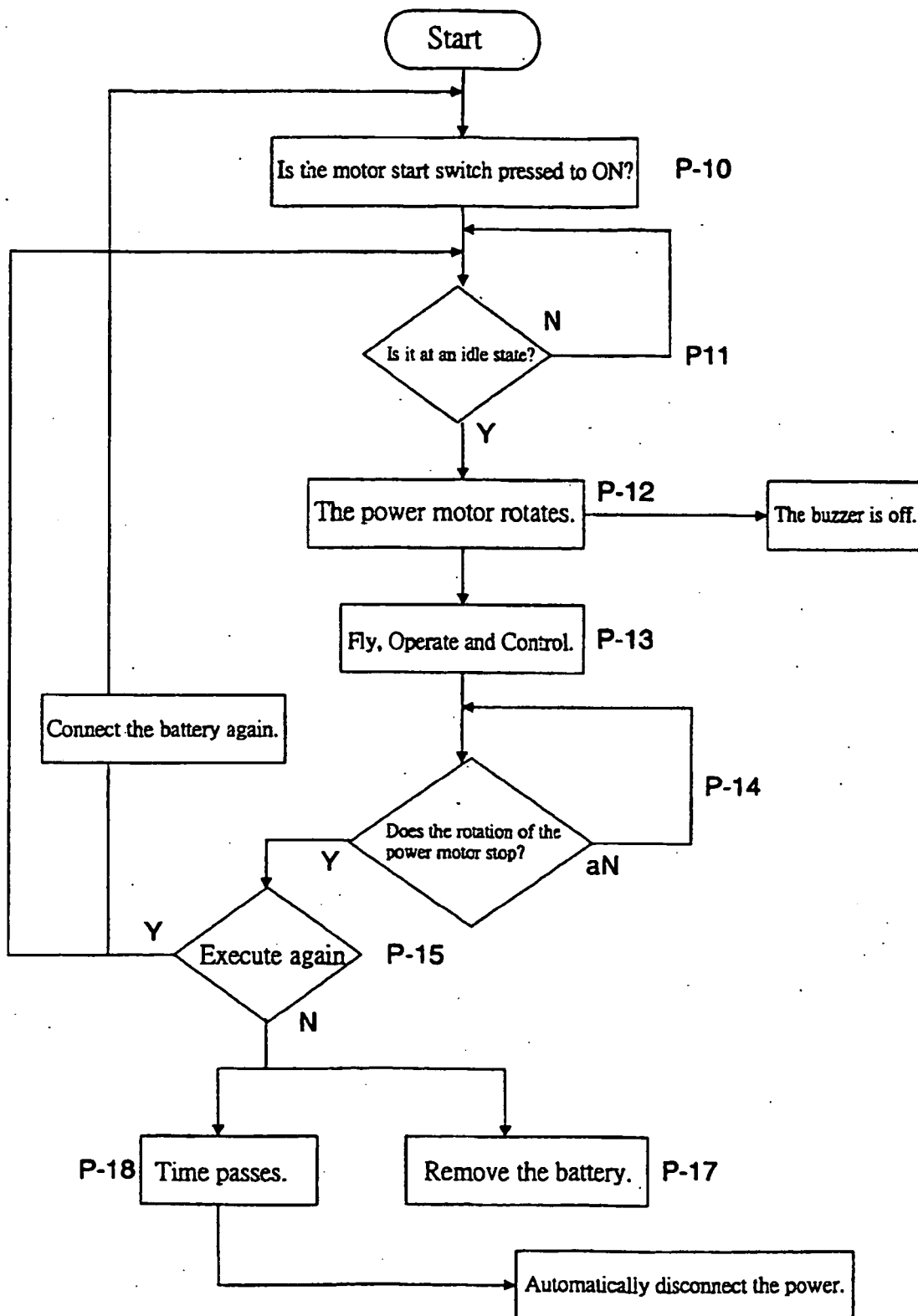


FIG. 3

100

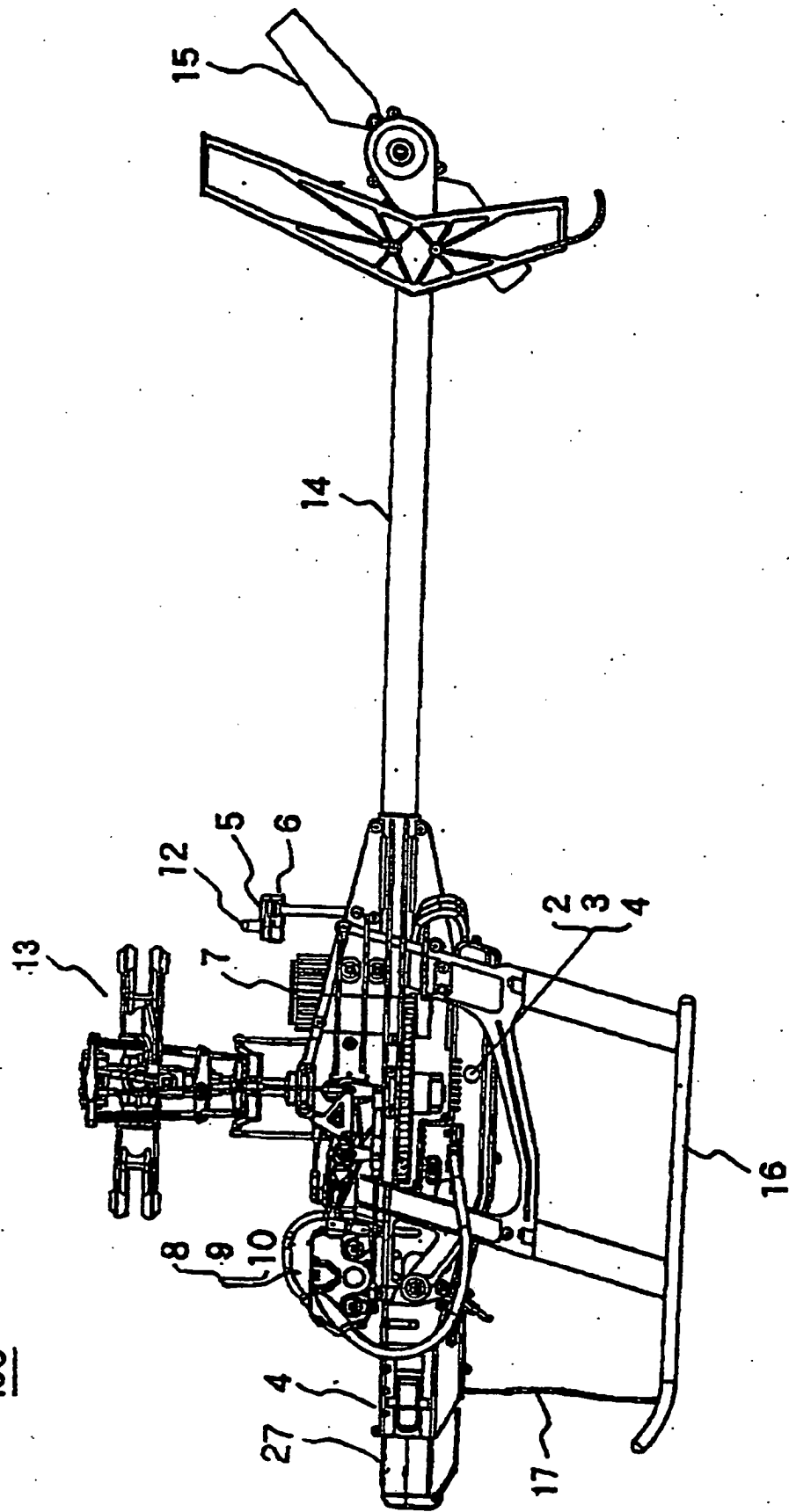


FIG. 4

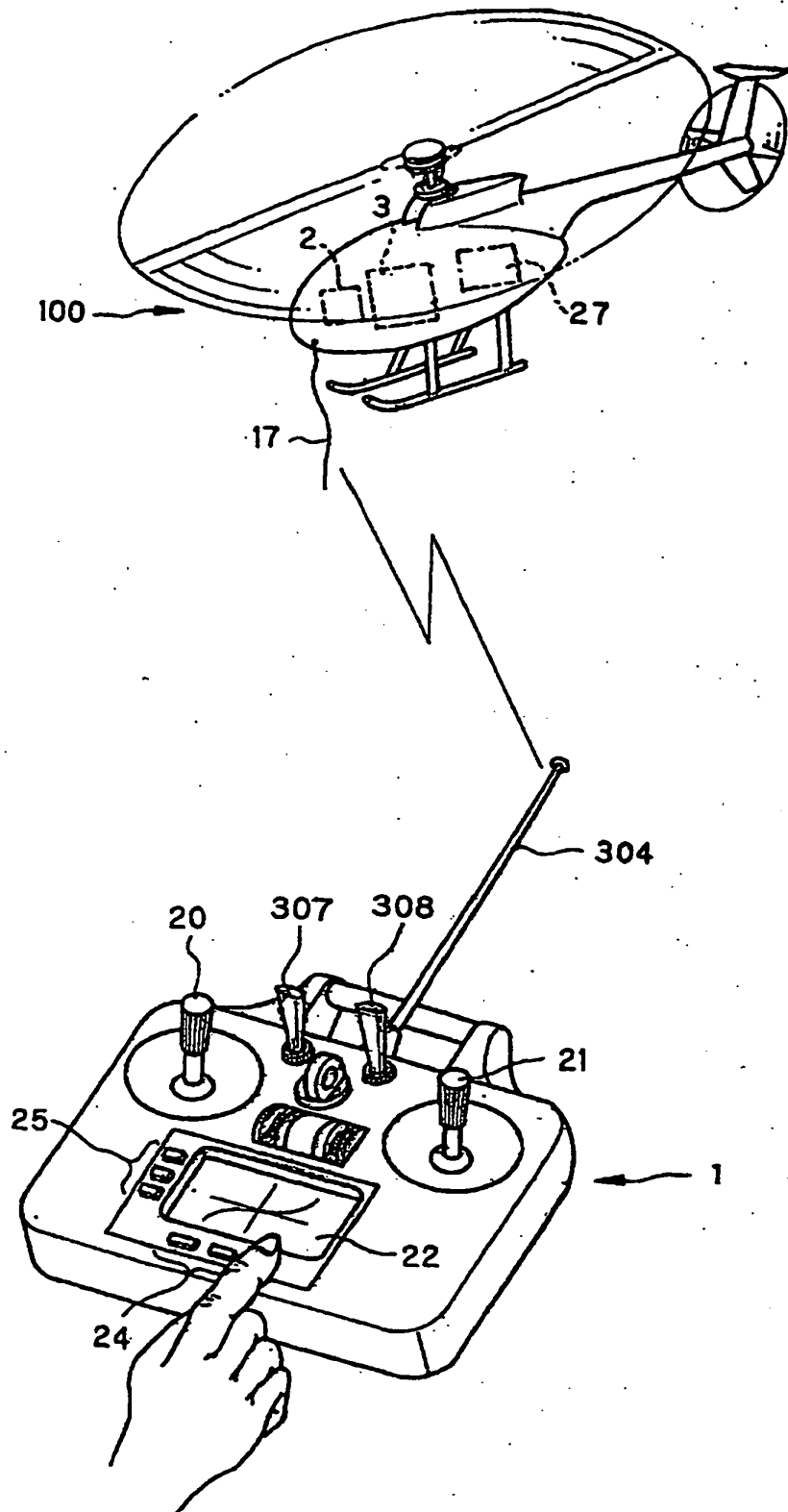


FIG. 5  
PRIOR ART

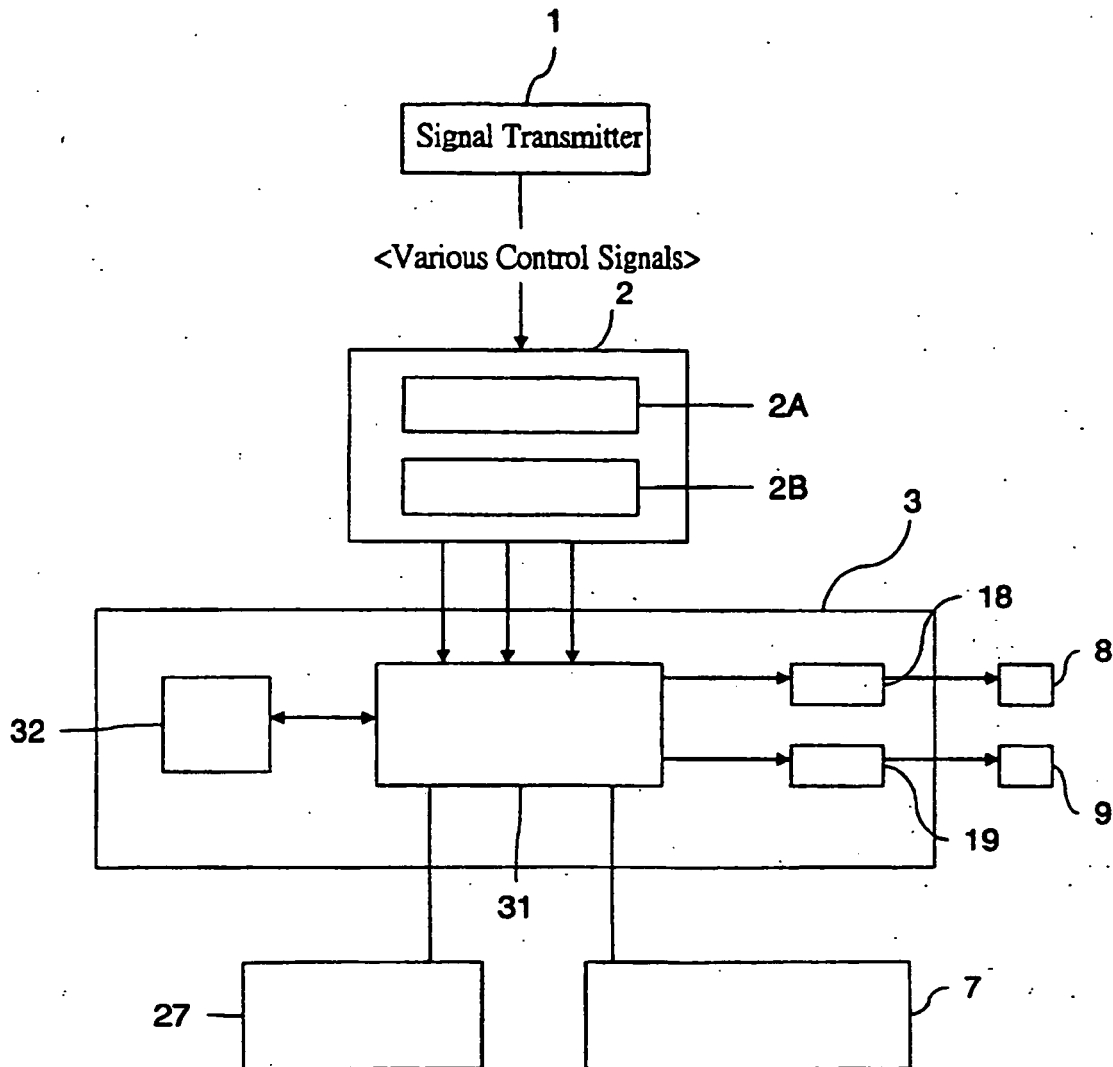


FIG. 6  
PRIOR ART

**REFERENCES CITED IN THE DESCRIPTION**

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