C. WIRTH.

WIRELESS RECEIVING ELECTRIC SYSTEM.

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1,012,496. Patented Dec. 19, 1911.

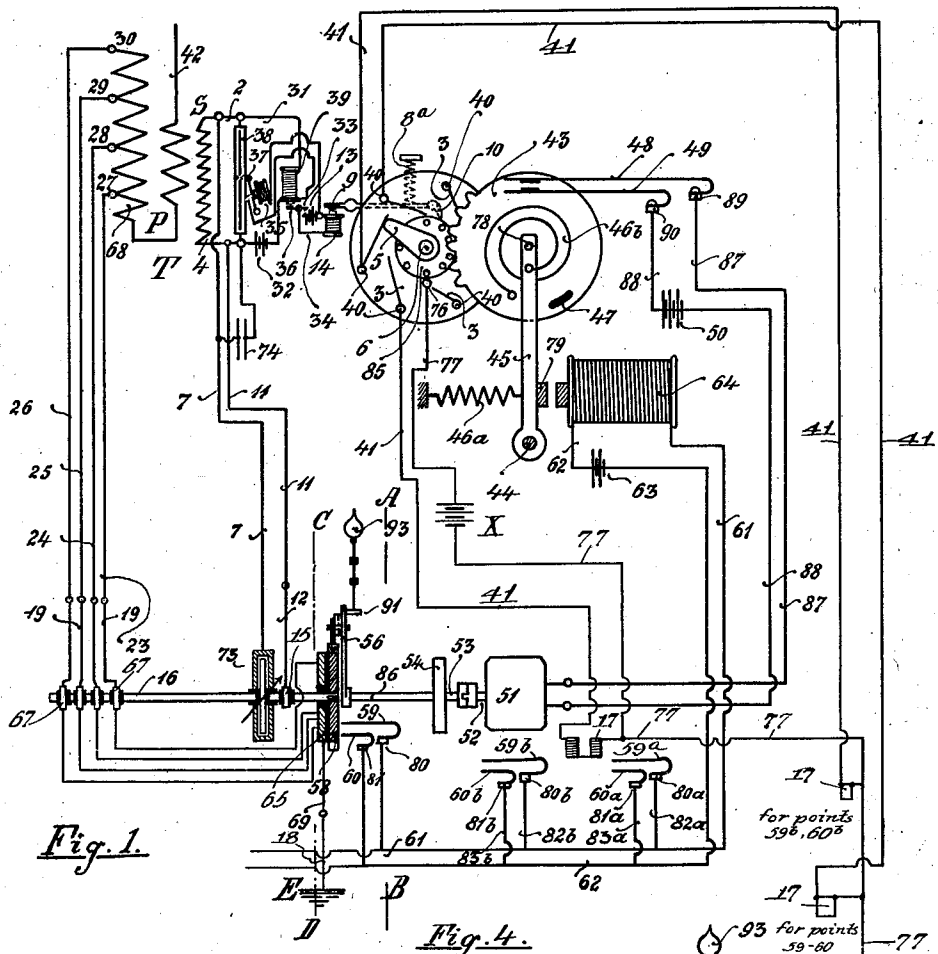

Fig. 1.

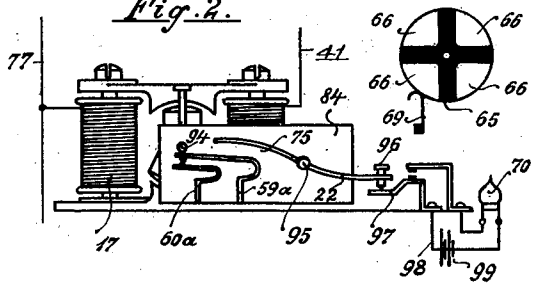

Fig. 2.

Fig. 4.

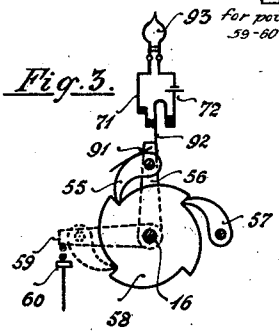

Fig. 3.

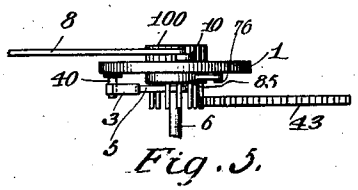

Fig. 5.

Witnesses:
Corinne Myers.
Vera Paulsen.

Inventor:
Christoph Wirth
by L. K. Böhm.
Attorney.

UNITED STATES PATENT OFFICE.

CHRISTOPH WIRTH, OF NUREMBERG, GERMANY.

WIRELESS RECEIVING ELECTRIC SYSTEM.

1,012,496. Specification of Letters Patent. Patented Dec. 19, 1911.

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To all whom it may concern:

Be it known that I, CHRISTOPH WIRTH, a citizen of the Empire of Germany, residing at Nuremberg, in the Empire of Germany, have invented a new and useful Wireless Receiving Electric System, of which the following is a specification.

My invention relates to improvements in wireless receiving electric systems disposed at some place, or on board a ship, or on an acrostatic vessel or machine, or in an automobile torpedo, or on any other unmanned vessel or vehicle, and adapted to be controlled over distance by means of electrical impulses for setting to work or stopping various known devices, machines, apparatus, or the like.

The object of my improvements is to protect such a receiving electric system from disturbances by foreign electrical impulses of the same kind for which it has been tuned.

The improvements consist in regulating devices in the receiving circuit and in a mechanism for varying the said regulating devices, so that the responsive capacity of the receiving circuit can be at will varied.

I will now proceed to describe my invention with reference to the accompanying drawing, in which—

Figure 1 is a diagram of a wireless receiving electric system comprising a receiving circuit with regulating devices, circuits controlled by the receiving circuits, a distributer, and a mechanism for varying the regulating devices, only parts of the operating circuits under the control of the distributer being shown, Fig. 2 is a view of a part of the mechanism for varying the regulating devices, Fig. 3 is a cross section through the line A—B in Fig. 1. Fig. 4 is a cross section through the line C—D in Fig. 1, and Fig. 5 is a top plan view of certain detail parts.

Similar characters of reference refer to similar parts throughout the several views.

The antenna of the receiving circuit is shown to consist of an aerial conductor 42, Fig. 1, the primary coil P of a transformer T and an inductance-coil 68. The secondary coil S of the transformer T is by lines 2 and 4 connected in multiple to the coherer or wave-responsive device 38 and the two lines 2 and 4 are respectively connected by lines 7 and 11, also a contact spring 12, with the terminals of a condenser 73. Another condenser 74 is connected to the line 11 and the lower terminal of the coherer 38. The induction coil of the condenser 73 is mounted on a shaft 16 turning in suitable bearings not shown and is electrically connected with a metallic disk 15, against which the contact spring 12 bears. Both this induction coil and the disk 15 are insulated from the shaft 16. A ratchet wheel 58 (Fig. 3) with four teeth is fastened on the right end of the shaft 16 in Fig. 1 and carries a disk consisting of a cross 65 (Fig. 4) of insulating material with four metallic sectors 66, 66, which latter are also insulated from the ratchet wheel 58 in any known manner. Four disks 67, 67 are fastened on the shaft 16 and are insulated therefrom, while they are separately connected with the four sectors 66, 66. A contact spring 69 (Figs. 1 and 4) bearing against the periphery of the disk 65, 66, 66 is by a line 18 connected with an earth-plate E. Four contact springs 19, 19 bearing against the disks 67, 67 are separately connected by lines 23, 24, 25, 26 with different points 27, 28, 29, 30 respectively on the inductance-coil 68. In a manner to be described later the ratchet wheel 58 and thereby the shaft 16 with the four disks 67, 67 and the induction coil of the condenser 73 can be brought into four different positions set at an angle of 90° from one another. The condenser 73 is in any known manner so constructed as to alter its capacity in accordance with the said four positions of the ratchet wheel 58. The other condenser 74 may have a constant capacity. It will be now understood, that for the four different positions of the ratchet wheel 58 the antenna will be differently tuned.

The coherer 38 is inserted in a circuit 31, which comprises a source of energy 32 and the coil of an electromagnet 39. The armature 36 of the electromagnet 39 is disposed on the left arm of a two-armed lever 33 and is insulated therefrom. The right arm of this lever 33 serves as a switch, which can close and open a circuit 34, that includes a source of energy 13 and the coil of an electromagnet 14. Shunted to the circuit 34 is a device 35 of any known construction for actuating the hammer 37 of the coherer 38. The armature of the electromagnet 14 is at-

tached to the left short arm 9 of a two-armed lever 8, 9 and is insulated therefrom. The right long arm 8 of this lever carries a pawl 10 (indicated by dotted lines in Fig. 1), which engages a ratchet wheel 100 that is not shown as it is covered by a pinion 85. A spring 8^a serves for pressing the long arm 8 downward, so as to detach the armature from the electromagnet 14. A shaft 6 is mounted in two parallel stationary disks 1 to turn and has fastened on it the said ratchet wheel, the pinion 85 and a crank 5. Six studs 40, 40 are assumed to be disposed on the stationary front disk 1 along its periphery and are electrically insulated therefrom. Each stud 40 carries a contact spring 3 against which the crank 5 can strike. Each stud 40 is moreover connected with a line 41 forming one terminal of an operating circuit. Six other studs 76 (of which only three are shown in Fig. 1) are disposed on the stationary front disk 1 and are each connected with a line 77 forming the other terminal of the respective operating circuit. The six studs 76 only one of which is shown in Fig. 5 are connected with contact springs behind the front disk, 1, which contact springs bear against the circumference of a disk of insulating material fastened on the shaft 6 and containing a radial metallic sector, that can come in contact with only one of the six contact springs at a time. For the sake of simplicity but one stud 40 and one stud 76 are shown in Fig. 5. It will be now understood, that as the ratchet wheel behind the pinion 85 has twelve teeth, it will be fed one tooth forward each time that the electromagnet 14 is energized, so that the crank 5 will close or open any of the six operating circuits, in other words it serves as a distributer.

A lever 45 is mounted on a stationary pin 44 to rock and carries at its upper free end a pin 78, on which a gear wheel 43 is mounted to turn. The gear wheel 43 can mesh with the pinion 85 and is elastically connected with the lever 45 by a spiral spring 46^b surrounding the pin 78. The lever 45 is pressed to the left in Fig. 1 by a helical spring 46^a secured to some stationary point, so that the gear wheel 43 normally engages the pinion 85. The lever 45 carries the armature 79 of an electromagnet 64, the coil of which is inserted in the circuit 61, 62 of a source of energy 63. The line 61 terminates in a stud 80 on which a contact spring 59 is fastened. The other line 62 terminates in a stud 81 on which a contact spring 60 is fastened. The two contact springs 59 and 60 form a means for closing the circuit through the electromagnet 64.

In line with the shaft 16 another shaft 86 is mounted in suitable bearings (not shown) to turn and is adapted to be turned by a clockwork 54 of any known construction. It carries at the left end a crank 56 (Fig. 3), on which a spring-pressed pawl 55 is disposed for engaging the already mentioned ratchet wheel 58. In Fig. 3 the ratchet wheel 58 is to be turned in a direction opposite to that of the hands of a watch, while a stationary pawl 57 prevents it from turning in the opposite direction. An electromotor 51, the armature shaft 52 of which is coupled with another shaft 53, is adapted to wind up the spring of the clockwork 54. The two terminals of the electromotor 51 are connected with lines 87 and 88, in one of which a source of energy 50 is inserted. The line 87 is connected with a stud 89, on which a contact spring 48 is fastened, and in a similar manner the line 88 is connected with a stud 90, on which a contact spring 49 is fastened. The two contact springs 48 and 49 form a cut-out for the circuit of the electromotor 51. A bent contact piece 47 (which may be replaced by a pin) fastened on the gear wheel 43 and insulated therefrom is adapted to strike the contact spring 49 and to press it against the other contact spring 48, whereby the circuit is closed so that the electromotor 51 can start.

The crank 56 mentioned above carries a bent projection 91, which is adapted to press the upper contact spring 59 on the lower contact spring 60 and thus to close the circuit 61, 62, so that the electromagnet 64 will be energized for attracting its armature 79, whereby the gear wheel 43 is moved out of engagement with the pinion 85. The projection 91 is made to normally press against a contact spring 92 serving as a switch, whereby the circuit 71 of an optic signaling device 93 (an incandescent electric lamp for instance) and including a source of energy 72 is normally opened.

In addition to the contact springs 59, 60 as many contact springs 59^a, 60^a, 59^b, 60^b, ... are inserted in the circuit of the electromagnet 64, as there are operating circuits 41, 77 to be controlled by the distributer 5. In Fig. 1 only two of these additional contact springs are shown for want of space, the studs 80^a, 80^b, ... carrying the contact springs 59^a, 59^b, ... being connected with the line 61 by branches 82^a, 82^b, ... and the studs 81^a, 81^b, ... carrying the contact springs 60^a, 60^b, ... being connected with the line 62 by branches 83^a, 83^b, ...

Each operating circuit 41, 77 includes the coils of an electromotor 17 (Fig. 2), the armature shaft of which is adapted to wind up the spring of a clockwork 84 of any known construction, either directly or by means of a shaft 94, as the case may be. On some projecting shaft 95 of the clockwork 84 a two-armed lever 22, 75 is fastened, one arm 75 of which is adapted to press one part of the corresponding contact

springs, that is in Fig. 2 the contact spring 59^a on the other contact spring 60^a, for closing the circuit of the electromagnet 64. The other arm 22 is made to normally depress by an adjustable screw 96 a contact spring 97 serving as a switch, whereby the circuit 98 of an optic signaling device 70 (in this case an incandescent electric lamp) and including a source of energy 99 is opened. The armature shafts of the several electromotors 17 serve for operating in addition to the clockworks 84 various known devices, machines, apparatus, or the like (not shown), which can be set to work and be stopped by the distributer 5. In general the several operating circuits by reason of the construction of the respective devices, machines, apparatus, etc., require a certain time before the respective effect is obtained or produced, although this time may be very short and may comprise only a few seconds, a fact which is to be borne in mind for the following explanations.

The wireless receiving electric system described operates as follows: It is in any known manner so tuned as to be responsive to the waves transmitted at any moment from the sending station, for example the disk 65, 66, 66 on the ratchet wheel 58 may occupy such a position as to connect the point 30 on the inductance-coil 68 by the line 26 with the earth-plate E. Then each time that in response to the electrical impulses transmitted from the sender the coherer 38 becomes conductive, it will close the primary circuit, that is the circuit 31 of the electromagnet 39, so that the latter will be energized for attracting its armature 36. Thereby the secondary circuit, that is the circuit 34 of the electromagnet 14, will be closed for simultaneously energizing the electromagnet 14 and the device 35. In consequence of this the electromagnet 14 will attract its armature and turn the long arm 8 with the pawl 10 upward. Immediately afterward it will become without current and will release its armature, so that the long arm 8 is again pressed by its spring downward, whereby the ratchet wheel will be fed one tooth forward, so that the crank or distributer 5 may strike any contact spring 3 and bend it, whereby the respective operating circuit 41, 77 is closed, or the crank 5 may release any contact spring 3 and engage in the space between it and the next following contact spring 3, whereby the said operating circuit 41, 77 is again opened. Meanwhile the device 35 will have actuated the hammer 37 for restoring the normal state of the coherer 38. Evidently in Fig. 1 the crank 5 requires to be turned in the direction of the hands of a watch, so that the gear wheel 43 will be turned in the opposite direction, whereby the spiral spring 46^b is strained. Each time that any operating circuit 41, 77 is closed by the distributer 5, the corresponding electromotor 17 will start for operating the respective devices, machines, apparatus, etc. At the moment that the electromotor 17 starts, it will also wind up the spring of the clockwork and the arm 22 will release the contact spring 97 whereby the circuit 98 of the optic signaling device 70 will be closed. The clockwork 84 is so adjusted that the arm 75 can strike and press the upper contact spring 59^a on the lower contact spring 60^a at the moment that the respective effect to be produced by the operating circuit 41, 77 has been obtained or produced and the electromotor 17 ceases working. Then by the contact springs 59^a, 60^a the circuit of the electromagnet 64 will be closed for energizing the latter. In consequence of the attraction of the armature 79 the lever 45 will be turned to the right while overcoming the strain of the helical spring 46^a, so that the gear wheel 43 will come out of engagement with the pinion 85, whereupon it will be returned to its initial position shown by the strained spiral spring 46^b. The spring of the clockwork 84 will turn the arm 22 back to its initial position, so that it will depress the contact spring 97 and thereby open the circuit 98 of the optic signaling device 70, which then becomes inoperative. The signals conveyed by the various optic devices 70 to the sending station will keep the operator posted about the state of things at the receiving station. Evidently the distributer 5 is turned through the same small angle corresponding to the pitch of the ratchet wheel behind the pinion 85 each time that the coherer 38 responds to the electrical waves transmitted, so that it will close and open the several operating circuits one after the other. As, however, the effects to be produced by the several operating circuits 41, 77 can not be at once produced or obtained, but after a determined number of units of time (seconds for example), it is possible to select any of the several operating circuits by causing the distributer 5 to step rapidly before it strikes and depresses the right contact spring 3. It is also obvious, that the gear wheel 43 which meshes with the pinion 85 will be turned through a small distance each time that the distributer 5 which is on the same shaft as the pinion 85 is moved one step forward, so that the distributer 5 may complete one revolution or more before the contact piece 47 on the gear wheel 43 can strike and press the lower contact spring 49 against the upper contact spring 48 for closing the circuit of the electromotor 51. As after the completion of one revolution of the distributer 5 the gear wheel 43 will in any case have returned to its initial position without coming in contact with the contact

spring 49, the receiving electric system will remain in the same position for responding to the electrical impulses of the same kind, so that any of the operating circuits can be opened and closed over distance from the sender.

When by chance electrical impulses of the same kind from some source other than the sender should meet the aerial conductor 42, of course they would produce the same effects as described above. Then the optic signals conveyed by the several devices 70 would inform the operator at the sending station of this fact. In case of war things would be very dangerous if for example a battle-ship of the enemy could send out impulses of the same kind and produce irregularities. If for example the receiving electric system were disposed on a torpedo-like vessel and one operating circuit were to control a certain speed or an alteration of the direction of the vessel, and if an electrical impulse had been transmitted from the sender for causing the distributer 5 to strike and depress the contact spring 3 belonging to the said operating circuit it would take perhaps two seconds before the desired effect is produced. If now within these two seconds the enemy transmits an impulse of the same kind, the distributer 5 would be thereby caused to leave the contact spring 3, so that the effect intended by the operator could not be produced. As the optic device 70 fails to signal, the operator would perceive that some disturbance by the enemy had taken place and he would endeavor by rapidly transmitting a certain number of impulses to turn the distributer 5 again into the right position for the desired effect. If the enemy again sends out electrical impulses and the same occurrence were repeated, the desired effect might be further delayed. It would even be prevented from being at all produced, if the contact piece 47 were not disposed on the gear wheel 43. With the aid of the contact piece 47, however, all further endeavors of the enemy will be frustrated in the following manner: As soon as owing to the continued turning of the distributer 5 the contact piece 47 strikes and presses the lower contact spring 49 against the upper contact spring 48, the circuit 87, 88 of the electromotor 51 will be closed, so that this motor starts and in the manner described above turns the crank 56 with the pawl 55 from the position shown in full lines in Fig. 3 to the other position indicated by dotted lines. Thereby also the shaft 16 with the four disks 67, 67 and the induction coil of the condenser 73 will be turned through the same angle, so that not only another length of the inductance-coil 68 will be inserted, but also the capacity of the condenser 73 will be altered and consequently the aerial conductor 42 will be tuned for electrical impulses of another kind. At the same time the projection 92 of the crank 56 will have struck and depressed the contact spring 59 for closing the circuit 61, 62 of the electromagnet 64, so that by the lever 45 the gear wheel 43 will be moved off from the pinion 85 and be returned to its initial position by the spiral spring 46^b. As the electromagnet 64 again becomes without current, the helical spring 46^a will return the lever 45 to its normal position and thus put the gear wheel 43 into engagement with the pinion 85, and the spring of the clockwork 54 will return the crank 56 to its initial position, whereby the optic device 93 becomes inoperative. Then the operator will be enabled to henceforward operate the torpedo-like vessel as he may desire, without being disturbed by the enemy.

The wireless receiving electric system may be varied in many respects without departing from the spirit of my invention.

The regulating devices 73, 74, 68 and the transformer T may be replaced by their equivalents.

From the diagram of Fig. 1 of the drawings it will be observed that a connection of the contacts 40 and 76 with the contacts 59^a—60^a, etc., of the magnet 64, does not take place. These series of contacts 59^a—60^a, 59^b—60^b, 59—60, etc., belong to the circuits of the motors 17 associated therewith, it being understood that there will be one of the motors 17 for each set of contacts 59^a—60^a, 59^b—60^b, etc., and in this connection it will be further seen that but one contact 76 is provided with which the contact lever 5 is always electrically connected. The circuit wire 77, which is connected to the contact 76, includes a source of energy x and successively has a connection with one terminal of the several motors 17, and the other terminal of each of said motors 17 has a wire connection 41 with one of the contact points 40, all of which plainly appears in the diagrammatic view. It may be further observed that the single signal lamps 70 will momentarily be lighted as the lever 5 passes. This is not a disadvantage in the operation of the apparatus but, on the contrary, an advantage because the motion of the said lever is incidentally and constantly controlled thereby.

I claim:

1. In a wireless receiving electric system of the kind described, the combination with a receiving circuit, of regulating devices in said receiving circuit, circuits controlled by the receiving circuit, a distributer controlled by said circuits controlled by the receiving circuit, operating circuits adapted to be closed and opened one after the other by said distributer, and a mechanism under the control of said operating circuits for varying

said regulating devices, so that the responsive capacity of said receiving circuit can be at will varied.

2. In a wireless receiving electric system of the kind described, the combination with a receiving circuit, of regulating devices in said receiving circuit, circuits controlled by said receiving circuit, a distributer controlled by said circuits controlled by the receiving circuit, operating circuits adapted to be closed and opened one after the other by said distributer, a mechanism under the control of said operating circuits for varying said regulating devices, so that the responsive capacity of said receiving circuit can be at will varied, clockworks connected with said mechanism, optic signaling devices, and subsidiary circuits including said optic signaling devices, said clockworks being severally adapted to be wound up and to close the corresponding subsidiary circuit on the corresponding operating circuit being closed and to return to its normal condition and to open the subsidiary circuit on the operating circuit being again opened.

3. In a wireless receiving electric system, the combination with a receiving conductor, of regulating devices in said receiving conductor, circuits controlled by said receiving conductor, a distributer comprising a plurality of insulated contact springs along its periphery, a revoluble insulated shaft with a ratchet wheel and a contact crank adapted to strike the contact springs one after the other, means operated by said circuits controlled by the receiving conductor for intermittently feeding the ratchet wheel of said distributer, electromotors, operating circuits connecting said electromotors with the contact springs and the crank of said distributer, a pinion on the shaft of said distributer, an electromagnet, a lever carrying a pin and the armature of said electromagnet, a gear wheel turnable on the pin of said lever, a spring for returning said gear wheel into an initial position, a spring for normally moving said lever off from said electromagnet and pressing said gear wheel into engagement with said pinion, a controlling circuit including said electromagnet, contact springs in said controlling circuit, clockworks adapted to be severally wound up by said electromotors and to close said contact springs on the corresponding operating circuit being again opened, so that said electromagnet is energized for moving by said lever said gear wheel out of engagement with said pinion, an operating shaft, means operated by said operating shaft for varying the regulating devices, a regulating circuit comprising a contact spring, means operated by said regulating circuit for intermittently turning said operating shaft and at last closing one of the last mentioned contact springs and a part on said gear wheel adapted to close the contact spring of said regulating circuit, so that on the angle of rotation of said gear wheel exceeding a predetermined limit said operating shaft is set to work for varying said regulating devices.

4. In a wireless receiving electric system, the combination with a receiving conductor, of regulating devices in said receiving conductor, a receiving circuit connected with said receiving conductor and comprising a coherer and a relay, a primary circuit controlled by the relay of said receiving circuit and comprising a relay, a tapping device for the coherer of said receiving circuit shunted to said primary circuit, a distributer comprising a plurality of insulated contact springs along its periphery, a revoluble insulated shaft with a ratchet wheel and a contact crank adapted to strike the contact springs one after the other, means operated by the relay of said primary circuit for intermittently feeding the ratchet wheel of said distributer, electromotors, operating circuits connecting said electromotors with the contact springs and the crank of said distributer, a pinion on the shaft of said distributer, an electromagnet, a lever carrying a pin and the armature of said electromagnet, a gear wheel turnable on the pin of said lever, a spring for returning said gear wheel into an initial position, a spring for normally moving said lever off from said electromagnet and pressing said gear wheel into engagement with said pinion, a secondary circuit including said electromagnet, contact springs in said secondary circuit, clockworks adapted to be severally wound up by said electromotors and to close said contact springs on the corresponding operating circuit being again opened, so that said electromagnet is energized for moving by said lever said gear wheel out of engagement with said pinion, an operating shaft, means operated by said operating shaft for varying said regulating devices, a third circuit comprising a contact spring, means operated by said third circuit for intermittently turning said operating shaft and at last closing one of said contact springs, and a part on said gear wheel adapted to close the contact spring of the third circuit, so that on the angle of rotation of said gear wheel exceeding a predetermined limit said operating shaft is set to work for varying said regulating devices.

5. In a wireless receiving electric system, the combination with a receiving conductor, of regulating devices in said receiving conductor, circuits controlled by said receiving conductor, a distributer comprising a plurality of insulated contact springs along its periphery, a revoluble insulated shaft with a ratchet wheel and a contact crank adapted to strike the contact springs one after the other, means operated by said circuits for

intermittently feeding the ratchet wheel of said distributer, electromotors, operating circuits connecting said electromotors with the contact springs and the crank of said distributer, a pinion on the shaft of said distributer, an electromagnet, a lever carrying a pin and the armature of said electromagnet, a gear wheel turnable on the pin of said lever, a spring for returning said gear wheel into an initial position, a spring for normally moving said lever off from said electromagnet and pressing said gear wheel into engagement with said pinion, a controlling circuit including said electromagnet, contact springs in said controlling circuit, optic signaling devices, subsidiary circuits including said optic signaling devices, clockworks adapted to be severally wound up by said electromotors and to first close and at last open the corresponding subsidiary circuit and to close at last the corresponding contact spring, so that said electromagnet is energized for moving by said lever said gear wheel out of engagement with said pinion, an operating shaft, means operated by said operating shaft for varying said regulating devices, a regulating circuit comprising a contact spring, means operated by said regulating circuit for intermittently turning said operating shaft and at last closing one of the contact springs, and a part on said gear wheel adapted to close the contact spring of said regulating circuit, so that on the angle of rotation of said gear wheel exceeding a predetermined limit said operating shaft is set to work for varying said regulating devices.

6. In a wireless receiving electric system, the combination with a receiving conductor, of regulating devices in said receiving conductor, circuits controlled by said receiving conductor, a distributer comprising a plurality of insulated contact springs along its periphery, a revoluble insulated shaft with a ratchet wheel and a contact crank adapted to strike the contact springs one after the other, means operated by said circuits for intermittently feeding the ratchet wheel of said distributer, electromotors, operating circuits connecting said electromotors with the contact springs and the crank of said distributer, a pinion on the shaft of said distributer, an electromagnet, a lever carrying a pin and the armature of said electromagnet, a gear wheel turnable on the pin of said lever, a spring for returning said gear wheel into an initial position, a spring for normally moving said lever off from said electromagnet and pressing said gear wheel into engagement with said pinion, a controlling circuit including said electromagnet, contact springs in said controlling circuit, optic signaling devices, subsidiary circuits including said optic signaling devices, clockworks adapted to be severally wound up by said electromotors and to first close and at last open the corresponding subsidiary circuit and to close at last the corresponding contact spring, so that said electromagnet is energized for moving by said lever said gear wheel out of engagement with said pinion, an alarming circuit comprising an optic signaling device, an operating shaft, means operated by said operating shaft for varying said regulating devices while first closing and at last opening said alarming circuit, a regulating circuit comprising a contact spring, means operated by said regulating circuit for intermittently turning said operating shaft and at last closing one of the contact springs, and a part on said gear wheel adapted to close the contact spring of said regulating circuit, so that on the angle of rotation of said gear wheel exceeding a predetermined limit said operating shaft is set to work for varying said regulating devices.

7. In a wireless receiving electric system, the combination with a receiving conductor, of regulating devices in said receiving conductor, a receiving circuit connected with said receiving conductor and comprising a coherer and a relay, a primary circuit controlled by the relay of said receiving circuit and comprising a relay, a tapping device for the coherer of said receiving circuit shunted to said primary circuit, a distributer comprising a plurality of insulated contact springs along its periphery, a revoluble insulated shaft with a ratchet wheel and a contact crank adapted to strike the contact springs one after the other, means operated by the relay of said primary circuit for intermittently feeding the ratchet wheel of said distributer, electromotors, operating circuits connecting said electromotors with the contact springs and the crank of said distributer, a pinion on the shaft of said distributer, an electromagnet, a lever carrying a pin and the armature of said electromagnet, a gear wheel turnable on the pin of said lever, a spring for returning said gear wheel into an initial position, a spring for normally moving said lever off from said electromagnet and pressing said gear wheel into engagement with said pinion, a secondary circuit including said electromagnet, contact springs in said secondary circuit, optic signaling devices, subsidiary circuits including said optic signaling devices, clockworks adapted to be severally wound up by said electromotors and to first close and at last open the corresponding subsidiary circuit and to close at last the corresponding contact spring, so that said electromagnet is energized for moving by said lever said gear wheel out of engagement with said pinion, an operating shaft, means operated by said operating shaft for varying said regulating devices, a third circuit comprising a contact

spring, means operated by said third circuit for intermittently turning said operating shaft and at last closing one of the contact springs, and a part on said gear wheel adapted to close the contact spring of said third circuit, so that on the angle of rotation of said gear wheel exceeding a predetermined limit said operating shaft is set to work for varying said regulating devices.

8. In a wireless receiving electric system, the combination with a receiving conductor, of regulating devices in said receiving conductor, a receiving circuit connected with said receiving conductor and comprising a coherer and a relay, a primary circuit controlled by the relay of said receiving circuit and comprising a relay, a tapping device for the coherer of said receiving circuit shunted to said primary circuit, a distributer comprising a plurality of insulated contact springs along its periphery, a revoluble insulated shaft with a ratchet wheel and a contact crank adapted to strike the contact springs one after the other, means operated by the relay of said primary circuit for intermittently feeding the ratchet wheel of said distributer, electromotors, operating circuits connecting said electromotors with the contact springs and the crank of said distributer, a pinion on the shaft of said distributer, an electromagnet, a lever carrying a pin and the armature of said electromagnet, a gear wheel turnable on the pin of said lever, a spring for returning said gear wheel into an initial position, a spring for normally moving said lever off from said electromagnet and pressing said gear wheel into engagement with said pinion, a secondary circuit including said electromagnet, contact springs in said secondary circuit, optic signaling devices, subsidiary circuits including said optic signaling devices, clockworks adapted to be severally wound up by said electromotors and to first close and at last open the corresponding subsidiary circuit and to close at last the corresponding contact spring, so that said electromagnet is energized for moving by said lever said gear wheel out of engagement with said pinion, an alarming circuit comprising an optic signaling device, an operating shaft, means operated by said operating shaft for varying said regulating devices while first closing and at last opening said alarming circuit, a third circuit comprising a contact spring, means operated by said third circuit for intermittently turning said operating shaft and at last closing one of the contact springs, and a part on said gear wheel adapted to close the contact spring of said third circuit, so that on the angle of rotation of said gear wheel exceeding a predetermined limit said operating shaft is set to work for varying said regulating devices.

CHRISTOPH WIRTH.

Witnesses:
HANS SCHODER,
RALPH W. DOX.