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ELECTRICAL DEVICE FOR CONTROLLING FROM A DISTANCE ANY NUMBER OF MOVEMENTS.

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.
To all whom it may concern:

Be it known that I, Pierre Viry, citizen of the French Republic, residing at Su
eres, Department of the Seine, in France, have invented certain new and useful Improvements in Electrical Devices for Controlling from a Distance Any Number of Movements; and I do hereby declare the following to be full, clear, and exact de
scription of the invention, such as will enable others skilled in the art to which it ap
tains to make and use the same.

The present invention has for its object an electric device for controlling from a distance any number of movements by means of two wires, or when an earth return is used by a single wire. This arrangement is represented by way of example in the accom-
panying drawings, in which:

Figure 1 is a general diagrammatic view of the receiving station. Fig. 3 is a diagrammatic view of a modification of the system. Figs. 4 and 5 represent a modified detail. Fig. 6 shows a special arrangement of the receiving station. Fig. 7 illustrates a construc
tion of the controlling keys. Fig. 8 represents a different method of arranging the two stations. Fig. 9 represents a detail of

Fig. 8.

The device in question comprises a transmitting station A (Fig. 1) and a receiving station B united by two wires C, it being understood that one wire only is necessary when an earth return is used.

The transmitting station A comprises vibrating plates \( a' a' \ldots a' \); the number “\( n \)” is equal to that of the movements to be ob
tained. The vibration periods of these plates differ very slightly in passing from one to the other, and their vibrations may be maintained electrically by means of \( a' \ldots a' \) and contacts \( a' a' \ldots a' \). One or other of the plates is rendered operative by pressing upon one of the knobs \( a' a' \ldots a' \) which closes the circuit of the corresponding plate and imparts the

first impulse to this plate. Pressure upon a

knob therefore causes throughout the duration of this pressure the emission in the line of a vibrated current, the period of which is equal to that of the corresponding plate. A knob \( e \) enables a continuous current to be sent through the line. The knob \( e \) may be

an ordinary circuit closer having its con

mected normally-separated by a spring or the like.

The receiving station comprises vibrating plates \( f' f' \ldots f' \) tuned with the plates of the transmitter respectively. In front of each plate there is a coil \( g' \); all the coils \( g' g' ... g' \) are arranged in series. Associated with each plate \( f' \) is a beam \( h' \) (Fig. 2), provided with a pawl \( i \) capable of engaging with the head of an iron-clad electro-magnet \( m \) around which all the plates are arranged.

The beams \( h' \) may be drawn back by the springs \( k' \). Carbons \( l \) carried on the extremi

ty of the beam permit of establishing the necessary connections with the fixed carbons \( m' \) and \( M' \) for the control to be effected. Normally, all the pawls are locked and a switch \( o \) sends the line current through the coils in series. If the knob \( d' \) at the transmitting station be pressed, the emission of vibrated current resulting therefrom produces the vibration of the plate \( f' \) at the receiving station and of plate \( f' \) only; the plate acts upon the pawl \( i \) the beam \( h' \) is released and the carbons \( b' \) and \( m' \) or \( M' \) establish the connections corresponding to the control of the knob \( d' \). When the beam is released its extremity opposite to the car

bons strikes against the switch \( o \); the current is thereby interrupted in the small coils and

sent into the iron clad coil \( g' \); the plate \( f' \) ceases to vibrate; the plate \( a' \) of the transmitter continues to vibrate so long as the operator presses on the button, but he need not continue to press as soon as the control has been produced. In order to cause the movement produced by this control to cease it is only necessary to bring the beam back into its normal position. With this object the operator at the trans

mitting station presses upon the knob \( e \); he thereby sends a continuous current through the iron clad coil; its core is attracted and the switch \( o \) carried by the upper rod of the core depresses the beam and produces the re-arrangement of the pawl \( f' \). When the operator releases the knob \( e \), a spring \( p \) re

turns the core of the coil to its normal posi

tion, and the switch again places the line in communication with the small coils in series; the apparatus is ready for a fresh control.

The device which has just been described is applicable to the control from a distance of all electric motors or electromagnets usi
lized for any purpose. Nevertheless, examples may be cited of the application of the invention to controlling a projector from a distance. In this case the apparatus may comprise eight controls: (1) One for the movement of rotation of the projector to "right quickly." (2) One for the movement of rotation of the projector to "right slowly." (3) One for the movement of rotation of the projector to "left quickly." (4) One for the movement of rotation of the projector to "left slowly." (5) One for the vertical movement of the projector "higher." (6) One for the vertical movement of the projector "lower." (7) One for the extinction of the arc. (8) One for the lowering of the screen without extinguishing the arc.

The various applications of which the device is capable may be classified as follows:

(1) Control analogous to that of projectors in which there is a transmitting station and a receiving station.

(2) Control with one or more transmitting stations and one or more receiving stations. In this case it is only necessary, as shown in Fig. 3, to arrange all the receivers in series and the transmitters in parallel.

(3) Control of signals the cessation of which need not be controlled from a transmitting station. In this case the apparatus may be simplified. Example: Application to annunciator boards.

In cases where it is advantageous to employ diapasons as vibrating bodies the two branches of these diapasons may be caused to participate in the release of the beam by adopting the arrangement shown in Figs. 4 and 5. Each branch of the diapason may act upon an elbow lever which transmits the vibrations of the diapason to a pivoted pawl with which the corresponding beam engages. A spring maintains the lever against the pawl, and a spring presses the pawl against the beam.

Fig. 6 represents diagrammatically a method of mounting the receiving station which enables the switch to be dispensed with. One of the extremities of the winding of the coil is connected with one of the line wires. The arrangement is such that the time constant (ratio of self-induction to the ohmic resistance) of the central coil is very high relatively to the constants of the coils. In this manner the vibrated currents pass almost entirely through the small coils while the continuous currents pass through the central coil.

In the installation illustrated in Fig. 1, it is necessary with the movement, to press upon a button which causes the emission of continuous current.

Fig. 7 represents a device in which no stop press buttons are necessary; the movement is produced throughout the entire duration of the pressure exerted upon one of the buttons and the movement is caused to cease by releasing this button. In the operative position each button is maintained at rest by a spring as shown in Fig. 7. Upon its rod there is fixed a tappet which is arranged to abut a plate formed at the upper part of the vibrating plate. A contact fixed to this plate is arranged to contact with a button. The tappet carries at its lower part an insulating piece beneath a flexible strip which tends to come into contact with a key electrically connected with the extremity of the coil. When the button is pressed the tappet releases the plate which is then able to vibrate and establishes intermittent contacts with the key. This strip rests upon the key and closes the circuit. Consequently sets up a vibratory current as indicated above. When the button is released the tappet in abutting the top of the plate presses the contact upon the contact which causes a continuous current to pass and returns the beam at the receiving station to its normal position. When the button reaches the end of its travel the insulating part lifts the strip and interrupts the current. In order that the passage of the continuous current may continue for a sufficient length of time to return the core of the central coil, a dash-pot is arranged at 19 for retarding the movement.

With the various devices described above it is only possible to control a single movement at a time or several movements which begin and end at the same moment.

Figs. 8 and 9 relate to a method of mounting which permits of the simultaneous and independent control of a number of movements. The transmitting station A is in this case constituted by a transformer comprising as many primary circuits as there are vibrating plates. The transformer includes a transformer which forms the transmitting station, and controls the movements by means of the transformer contacts. The different primary circuits are mounted in parallel and connected with the terminals by a source of electricity arranged at the transmitting station. The second winding of the transformer is connected with the two line wires. The various plates can be rendered operative by acting upon the interrupters, etc. The receiving station B comprises a coil mounted in series, and connects with the two line wires. Each of the vibrating plates such as the arm may act upon a flexible arm (Fig. 9) carrying a contact. This contact pressing upon the other flexible arm may close a local...
circuit comprising a coil v'. The core of these coils makes the contacts m' or M' according to its position. The successive shocks in the vibrating plates upon the flexible arm o produces a continuous pressure of the contact 13 upon the contact v' during the whole time that the vibrations last. This result is obtained by appropriately selecting the oscillation periods of the vibrating plate.

Two flat springs x' produce a braking action upon the movement of the flexible arm y'. In these conditions the movement corresponding to each interrupter r' of the transmitter is produced during the entire period that the interrupter is closed. Several movements may therefore be controlled simultaneously and independently of each other owing to the principle of the superposition without confusion of small electric oscillations in one and the same circuit.

I claim:

1. In apparatus such as described, the combination with the principal circuit, of a receiving station comprising a plurality of coils in said circuit, a vibratory device associated with each coil, a contact device controlled by each vibratory device, and a common means for breaking the contacts made by the several contact devices.

2. In apparatus such as described, the combination with the principal circuit, of a receiving station comprising a plurality of coils in said circuit, a vibratory device associated with each coil, a contact device controlled by each vibratory device, and a common means for breaking the contacts made by the several contact devices, comprising a coil connected with said first named coils.

3. In apparatus such as described, a receiving station comprising a plurality of coils, a vibratory device associated with each coil, a normally locked spring contact device released by each vibratory device, and a coil having a core to restore all of said contact devices to their initial positions.

4. In apparatus such as described, a receiving station comprising a plurality of coils, a vibratory device associated with each coil, a normally locked spring contact device released by each vibratory device, and a coil having a core to restore all of said contact devices to their initial positions.

5. In apparatus such as described, a receiving station comprising a plurality of coils, a vibrator associated with each coil, a contact device controlled by each vibrator on the reception of its coil of a vibratory current, and a common restoring means for said contact devices, operated by a continuous current.

6. In apparatus such as described, a receiving station comprising a plurality of coils, a vibrator associated with each coil, a contact device controlled by each vibrator on the reception of its coil of a vibratory current, and a common restoring means for said contact devices, comprising a coil having a core operated by a continuous current.

7. In apparatus such as described, a transmitting station having means to emit a vibratory current or a continuous current, and a receiving station connected therewith comprising a coil, a contact device controlled by said coil on the reception thereof of a vibratory current, and restoring means for said contact device, operated by a continuous current.

8. In apparatus such as described, a transmitting station having vibrators to emit different vibratory currents and means to emit a continuous current, and a receiving station connected with said transmitting station and comprising a plurality of coils, vibrators associated with the respective coils and tuned with the vibrators of the transmitting station, contact devices controlled by the vibrators of the receiving station, and means at the receiving station for restoring the contact devices on the reception of a continuous current from the transmitting station.

In testimony whereof I affix my signature, in presence of two witnesses.

PIERRE VIRY.

Witnesses:
H. C. Cox,
GEORGES BONJU.