

(No Model.)

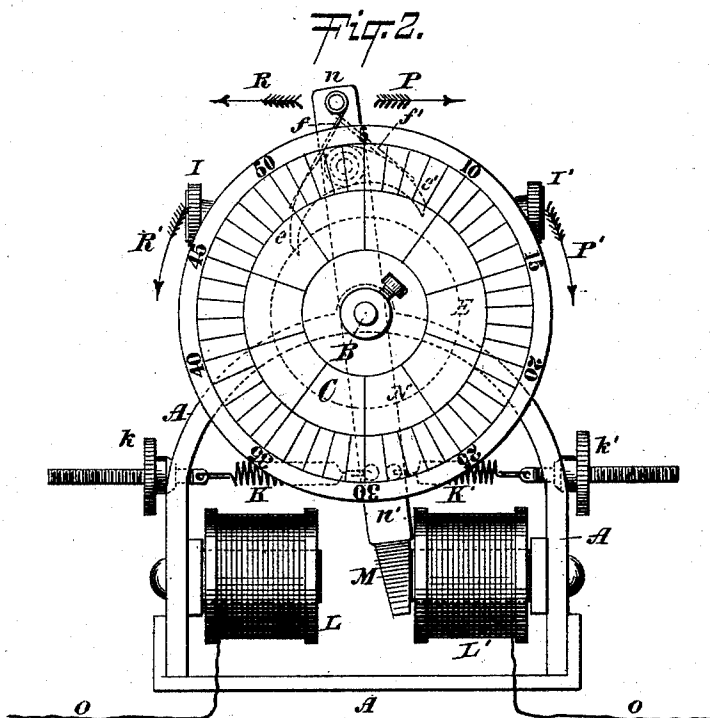
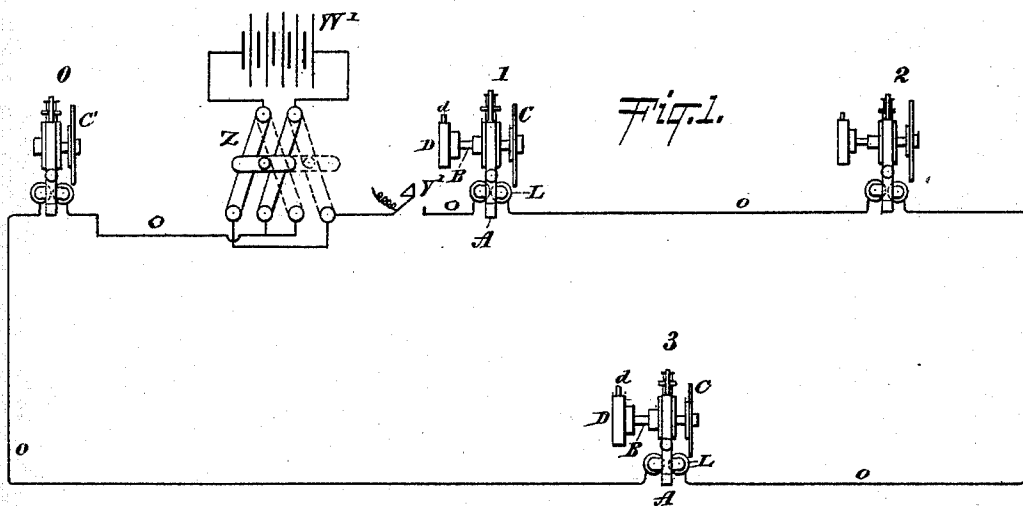
3 Sheets—Sheet 1.

H. E. VINEING.

MEANS FOR CONTROLLING THE OPERATION OF MECHANISMS.

No. 483,272.

Patented Sept. 27, 1892.



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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

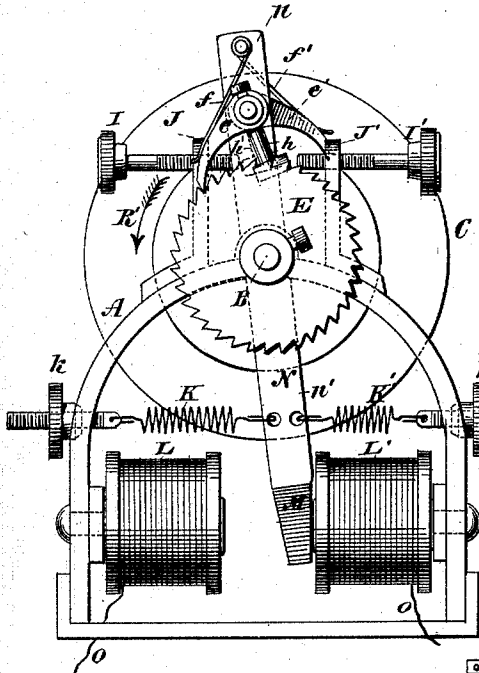


Fig. 4.

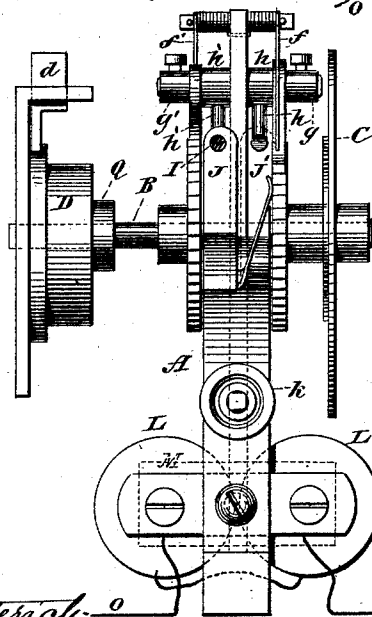
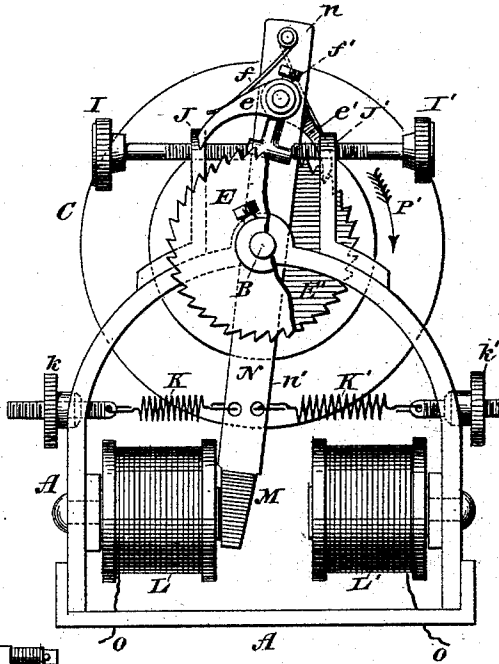


Fig. 5.

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(No Model.)

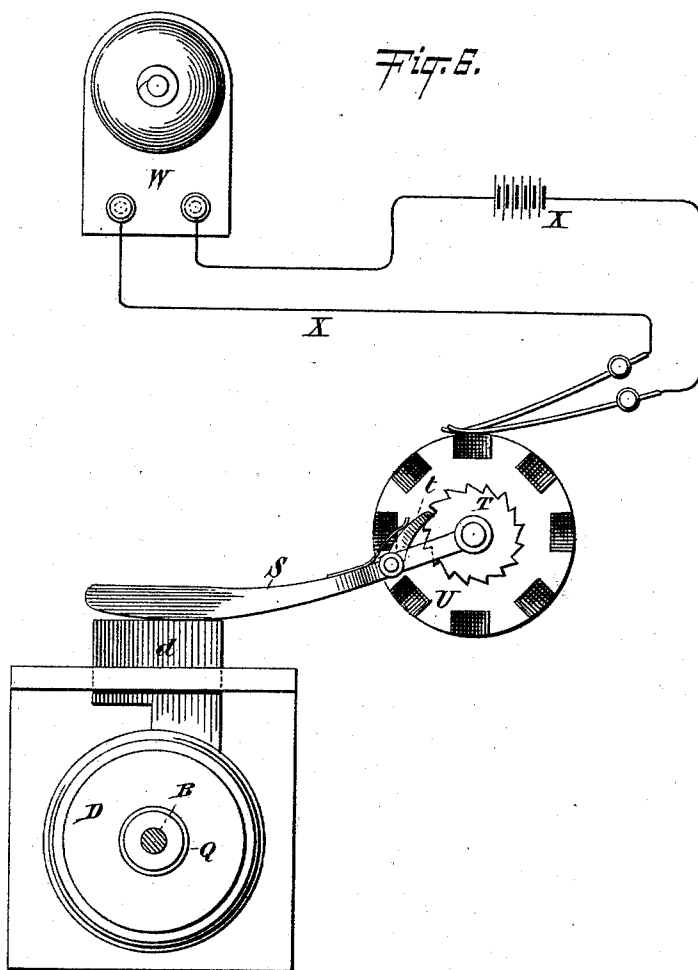
3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

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TO ROBERT S. WALKER, OF NEW YORK, N. Y.

MEANS FOR CONTROLLING THE OPERATION OF MECHANISMS.

SPECIFICATION forming part of Letters Patent No. 483,272, dated September 27, 1892.

Application filed February 27, 1892. Serial No. 422,986. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. VINEING, a citizen of the United States, residing at Roseville, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric Devices for Controlling the Operation of Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a device for controlling electrically from a central station the operation of different mechanical devices, such as electric lamps, locks, gas-lights, railroad-signals, and in general all devices which are used in numbers and the operation of which it is desirable to control from a central station or one fixed point; and its object is to enable the operator at such central station to control each one of such devices independently of the others.

In the accompanying drawings similar letters of reference refer to similar parts throughout the various views.

Figure 1 shows a plan view of four of my devices, including the operator's reference device, arranged in a single electric circuit. Fig. 2 is a front view of one of my devices, showing some of the parts behind the disk C in outline. Figs. 3 and 4 are front views, partly broken away, showing the parts in opposite directions, respectively. Fig. 5 is a side view of the same, and Fig. 6 shows one application of my device.

The pin or push-bar *d* or any equivalent device—such as a lever, for instance—arranged to control by its movement a mechanism or system of mechanisms resembles the bolt of an ordinary combination-lock D, which is operated by the shaft B. The shaft B bears at its other end the disk C, which is graduated, as shown in Fig. 2, like the disk of an ordinary combination-lock. Q represents the box holding the tumblers of the combination, which are properly “set” by the rotation of the shaft B, as in a combination-lock. The particular location of this disk C upon the shaft B is not essential. Also mounted upon said shaft B are two ratchet-wheels E and E', arranged with their serrations inclined in opposite directions, respectively, said ratchet-

wheels being kept in position by the springs K', Fig. 5. Said shaft is journaled in the frame A, and swinging bar N is supported by and swings loosely upon said shaft. Said bar carries on its upper segment *n* the pawls *e* and *e'*. Said pawls *e* and *e'* bear arms or lugs *h* and *h'*. Frame A also bears arms J and J', forming supports for set-screws I and I', abutting against the arms or lugs *h* and *h'*, respectively, on pawls *e* and *e'*. Springs *f* and *f'* are arranged to press said pawls *e* and *e'* into engagement with ratchet-wheels E' and E, respectively. The lower segment *n'* of swinging bar N bears an armature M, arranged so as to swing from a central position between the polarized electro-magnets L and L' to either of said magnets, closing the magnetic circuit. Springs K and K', attached to said swinging bar N and frame A, are arranged so as to maintain said armature M, attached to said swinging bar N, in its normal position between said magnets L and L' when the actuating electric current is not passing through the coils of either of said electro-magnets. Adjustment-screws *k* and *k'* regulate the tension of said springs K and K'. The wires of the circuit are *o o*.

The battery or other source of electricity is shown at W', Fig. 1. An ordinary pole-changer is represented at Z, Fig. 1, and V' represents an ordinary contact-key.

The operation of my device is as follows: We will suppose the combination of this particular device to be “10,” “50,” “20,” and that the disk C stands at “5.” If now the positive current be sent through the circuit, the electro-magnet L draws and the electro-magnet L' repels the armature M, so that it will be moved to the magnet L, Fig. 4. The upper segment *n* of the swinging bar N will then swing toward the right in the direction of arrow P', and the pawl *e'*, in engagement with the serrations of the ratchet-wheel E, will operate to turn the wheel E' in the direction of the arrow P', and the turning of this wheel revolves the shaft B, which carries the disk C. The stroke of the swinging arm L is arranged so that such stroke will revolve the disk C one point. During this operation the set-screw I', abutting against the lug *h*, disengages the pawl *e* from the ratchet-wheel E. The current is now

broken and the swinging bar N returns to its former position by the action of the springs K and K', pawl *e'* engaging with the next serration on the ratchet-wheel E'. Five such positive impulses having been imparted to the circuit, the disk of the combination will stand at "10," and the shaft B will set the corresponding tumblers. The positive current is now broken, and a negative current is set up in the circuit, and successive impulses will cause the upper segment *n* of the swinging bar N to swing each time toward the left, Fig. 3, in the direction of the arrow R', the pawl *e*, in engagement with the ratchet-wheel E, moving this wheel E one tooth at each electrical impulse, thereby revolving the shaft B and disk C one point, the pawl *e'* being disengaged at each impulse from the wheel E' by the set-screw I. Ten such negative impulses will cause the disk C to stand at "50," the shaft B setting the corresponding tumbler. The current is now broken and twenty positive impulses will again carry the disk C in the direction of the arrow P', so as to stand at "20," the shaft B thus setting the corresponding tumbler. The combination is now complete and the tumblers set, and a reverse rotation given by the negative impulses will move the pin or push-bar *b*, as the bolt is moved in an ordinary combination-lock. Opposite movement of the shaft B will move the push-bar *d* in the opposite direction, and the combination may be upset in the same manner in which it was set. Of course it will be understood that it is immaterial in which direction the positive current moves the shaft B.

Any number of these devices, all of which are similar, may be placed in the same circuit, either in multiple arc or in series, and each device may have a different combination, or two or more of them may have the same combination, as desired. Fig. 1, for instance, shows a circuit in which there are four such devices, that at O being intended as a guide for the operator and located at the central station. By means of this instrument at the central station, which operates in unison with all the other instruments on the circuit, it will be seen that the operator has a guide for setting any particular combination, whether that combination belongs to one or more of the devices in circuit. Thus, for instance, after setting the combination of one particular device and operating its corresponding push-bar D the operator then upsets that combination. This of course brings all of the disks of the different devices in circuit to the same point as that of the operator's disk, and the operator can set the second combination and operate its push-bar, and so on. Of course, if desired, two or more of the devices may have the same combination. It is evident that each push-bar will be moved only by its own proper combination.

In Fig. 6 I have shown one application of my device, wherein the pin or push-bar *d* operates the lever S, which turns the ratchet-

wheel T, by means of pawl *t*, so as to turn the wheel U, having insulated spaces upon its periphery, thus ringing a bell placed in the local circuit. In this arrangement it is not necessary to upset one combination before setting the next one, owing to the wheel having insulated spaces.

In describing the operation of my device I have specified the positive electrical impulses as being given by a make and break in the circuit, and the same for the negative impulses; but it is obvious that the circuit need not be broken if a high resistance be inserted, so that the pulsations will take place in a continuous positive current and again in a continuous negative current, this having practically the same effect on the armature as a make and break would have. Nor is it necessary that the disk C on the shaft B should be present on any of my devices except the one at the central station, as it is only a guide for the operator; but it is better to have it on each device, so that the combination can be set by hand, if desired, by means of a knob or handle, this being effected by first throwing the pawls out of engagement with the ratchet-wheels by any suitable device. I may also use an alternating current, in which case a polarized magnet would be unnecessary, as is well understood.

What I claim is—

1. The electric controlling device consisting of a pin or lever actuated by a disk and intermediate mechanism caused to rotate in alternately-opposite directions by mechanism operated by a number of successive electrical impulses of one polarity, then a break in the circuit, and then a number of successive electrical impulses of an opposite polarity, substantially as described.

2. In a series of electrically-controlled devices, (such as locks, lamps, &c.,) a corresponding series of pins or levers to operate said devices, all located on one circuit, and each of said pins being actuated independently of the others by a disk, (and intermediate mechanism,) caused to rotate in alternately-opposite directions by mechanism operated by a number of successive electrical impulses of one polarity, then a break in the circuit, and then a number of successive electrical impulses of an opposite polarity, substantially as described.

3. In an electric controlling device, the combination of a pin or lever actuated by a disk and tumblers, said disk caused to rotate in alternate opposite directions by ratchet-wheels and pawls, said ratchet-wheels and pawls operated by the armature of a polarized magnet, said polarized magnet causing the armature to move in alternately-opposite directions corresponding to the change in polarity of successive electrical impulses, an electric generator, and an electric circuit, all arranged and operated substantially as described.

4. In a series of electrically-controlled devices, (such as locks, lamps, &c.,) the combination of a corresponding series of pins actu-

ated independently of the others by a disk and tumblers, each of said disks caused to move in alternately -opposite directions by ratchet-wheels and pawls, said ratchet-wheels and pawls being moved by the armature of a polarized electro-magnet, said magnet causing its armature to move in opposite directions corresponding to the change in polarity of successive electrical impulses, an electric generator, and an electric circuit, substantially as described.

5 5. In an electric controlling device, the combination of electro-magnets LL, armature M, swinging bar N, pawls *e e'*, ratchet-wheels E
10 E', and shaft B, substantially as described.

6. In an electric controlling device, the combination of two or more disks C to operate tumblers, the corresponding pins or levers D, ratchet-wheels EE', pawls *ee'*, shafts B, swinging bars N, armatures M, electro-magnets L L', an electric circuit, and an electric generator, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of February, 1892.

HENRY E. VINEING.

Witnesses:

J. WARREN BIRD,
H. V. N. PHILIP.