

R. H. MANSON.
ELECTRIC CIRCUIT CONTROLLER.
APPLICATION FILED DEC. 27, 1909.

1,047,260.

Patented Dec. 17, 1912.

2 SHEETS-SHEET 1.

Fig. 1

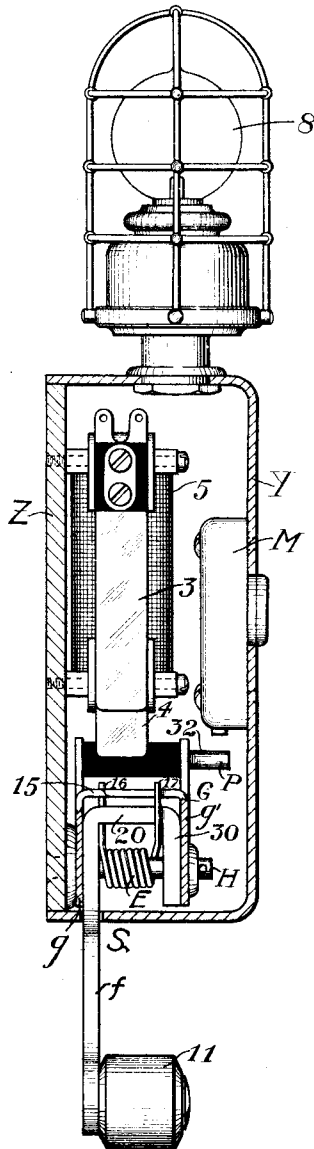
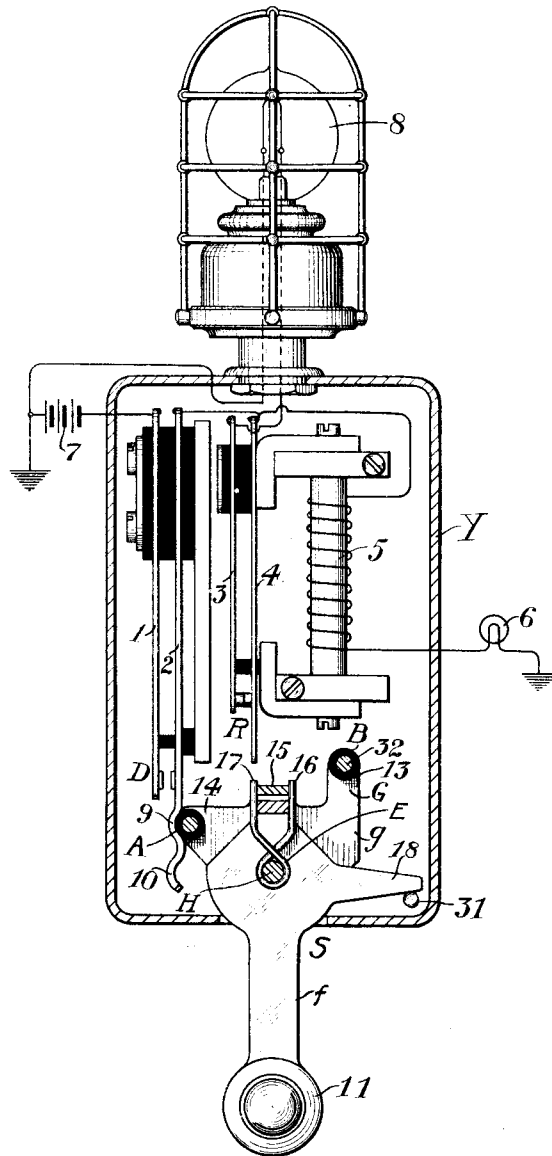


Fig. 2



Witnesses
Jos. J. Mizer
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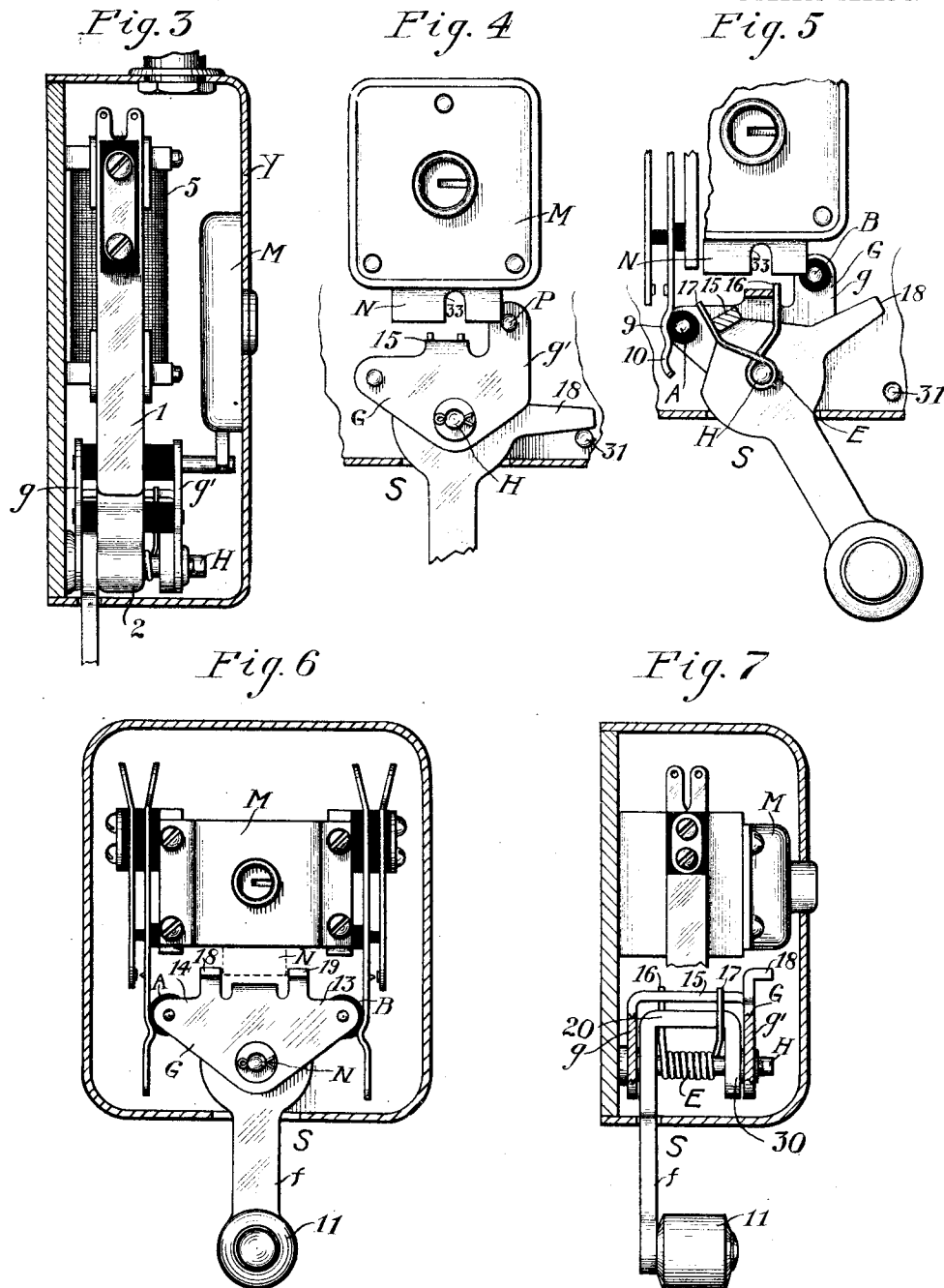
Inventor
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By
J. O. Richey
His Attorney

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His Attorney

UNITED STATES PATENT OFFICE.

RAY H. MANSON, OF ELYRIA, OHIO, ASSIGNOR TO THE DEAN ELECTRIC COMPANY,
OF ELYRIA, OHIO, A CORPORATION OF OHIO.

ELECTRIC-CIRCUIT CONTROLLER.

1,047,260.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed December 27, 1909. Serial No. 535,187.

To all whom it may concern:

Be it known that I, RAY H. MANSON, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented new and useful Improvements in Electric-Circuit Controllers; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to circuit controllers or switches for electric circuits; one of my intentions is to produce a circuit controller having a safety appliance protecting it against injury from operations under abnormal conditions or at inopportune times. With this aim in view, I disclose such a circuit controller which may be locked, and, if an effort is made to operate it when so locked, such effort will not effect any injury to the mechanism. In some uses to which circuit controllers of this type are put, it is desirable to provide a lock so that the mechanism thereof may be secured against operation by unauthorized persons; for example, in the circuits controlling the operation of self-propelled vehicles, etc. In such use it sometimes happens that incautious or unauthorized persons endeavor to operate such switches when so locked, the effect being sufficient to break some part of the switch or locking mechanism. One mechanism I have devised for preventing this and which I disclose, consists in making the circuit controlling mechanism of two parts coupled together by elastic means. One of the parts engages the contacts in the circuit; the other is accessible to the operator, and adapted to be thrown by him and to transmit the motion to the other part. The elastic means serving to couple the two parts, is stiff enough to transmit motion under normal conditions from one of these parts to the other, so that the contacts are operated in response to the throw. When the mechanism is locked, the elastic means will permit relative movement between the parts so that movement of the power transmitting member will cause that part to move without affecting the contact operating part, neither operating the contacts nor injuring the mechanism.

I find this circuit controller especially adapted for use in foot-operated switches and particularly on automobiles or other apparatus designed to be used by the general public who are unfamiliar with the mechanism of such devices, or, are at times, inconsequential.

Another advantage of my invention is to produce a switch which will indicate to the operator that the mechanism is locked if he undertakes to operate it when so locked. I accomplish this in the structure disclosed, as, owing to the different amounts of power required to perform the work of operating the switch and that required to overcome the elasticity of the coupling spring, the operator is apprised of the locked condition of the mechanism if he undertakes to throw the switch when locked.

Other improvements and other purposes of my invention will be better understood from the detailed description thereof when the same is taken in connection with the drawings.

I have disclosed my invention in connection with a particular form of lighting circuit, not that I intend to be limited thereto, but in order to make the operation clearer.

Figure 1 is a cross-section through the view shown in Fig. 2. Fig. 2 is a front elevation of the switch hook with the devices which control the contacts in an electric circuit which is shown diagrammatically. Fig. 3 is a fragmental side elevation of the switch. Fig. 4 is a fragmental front elevation of the switch locked. Fig. 5 is a front elevation showing the switch locked and the parts in a position which they assume when an effort is made to operate the switch when so locked. Fig. 6 is a front elevation of a modified form of the switch. Fig. 7 is a side elevation of this modification.

Referring to the drawings and to the embodiment of my invention there shown, I have illustrated a base member Z to which a front Y is fastened. A relay 5 controlling an electric switch 3-4 is mounted on the base together with a second switch consisting of the springs 1 and 2. On the top of the front Y I show an electric lamp 8 which is controlled over an electric circuit shown diagrammatically and including the con-

tacts of the switches, the relay 5 and the second lamp 6. In the form shown the spring 4 is acted upon directly by the magnet 5 serving as an armature therefor. I show a source of current 7 in this circuit.

At S I show a circuit controlling mechanism which consists of a part adapted to transmit power from the operator or operating means. This part is made up of a handle *f* having a button 11 at one end and being bent over into a U-shaped member at 20 and extending down into a second limb 30. The limbs *f* and 30 are perforated and the whole member is pivoted through these perforations upon a pin H projecting through the bottom of the base Z. From the limb *f* a pin 18 projects engaging a second pin 31 which projects from the base in the path of movement of the pin 18. A coil spring E is wound around that part of the pin H which lies between the limbs *f* and 30. The ends 16 and 17 of this spring are carried up to embrace the horizontal part 20 of the part *f*. A second part which is adapted to engage and operate the switch contacts when moved by the part *f*, is shown at G. This is also a U-shaped member consisting of two limbs *g* and *g'* and a connecting portion 15. The limbs 16 and 17 of the spring also embrace the horizontal portion 15 of the part G, serving to couple these two members together when they are actuated under normal conditions. Each of the limbs *g* and *g'* is carried up into projections 13 and 14. Between these projections fiber rollers A and B are journaled upon pins secured in the projections. The spring 2 is creased at 9 and 10, as shown, to receive the roller A, the spring retaining the roller and the part G in the position to which it has been thrown when the roller rests in one of these creases. The roller B is adapted to engage the spring 4 of the switch R to close it when the part *f* is thrown to its extreme right hand position. The pin 32 of the projection 13 extends forward at P as shown. At M I show a lock. N is the lock bolt having a recess 33 therein. The lock bolt N is adapted to engage the pin P, as shown in Fig. 4, to lock the part G in normal position. When in a position to close the switch D, the pin P may be engaged by the bolt N in its recess 33 to retain it in locked position. It will thus be seen that I may lock this circuit controller in normal or in operative position.

In order to make the construction of my device and the purposes and functions thereof clearer, I will describe its operation in connection with the circuit shown in Fig. 2. The lamp 6 serves as a signal lamp. The lamp 8 serves as a guard lamp to indicate when the signal is in operation. I desire to first light the lamp 6 placing the lamp 8 under control thereof, and test the lamp

8 to ascertain if it is in working condition. Assuming the circuit controller to be unlocked, I throw the part *f* to the right by kicking it with the foot. This will close the switch D, completing the circuit through battery 7, switch D, the relay 5, and lamp 6. When the part *f* is in this position, the part B is out of the path of the spring 4, so that when the relay 5 is energized, it pulls up its armature, opening the switch R in the circuit of the lamp 8. The part *f* may be thrown farther to the right and when thrown to its extreme right hand position, the roller B engages the end of the spring 4 of the switch R, overcoming the attractive force of the electromagnet, closing the switch R and lighting the lamp 8. This is done for the purpose of testing the lamp 8 to ascertain whether or not it is operating. When the part *f* is released, the joint action of the spring 2 and the magnet 5 operating against the spring 4 returns the part *f* to the second or intermediate position where it remains. To lock the circuit controller in either position, the bolt N is thrown down, engaging the pin P. If an effort is then made to operate the circuit controller, the spring E will give, permitting the limbs 16 and 17 to separate, as shown in Fig. 5. Neither the switch will be operated nor the mechanism injured as a consequence of this movement. The stiffness of the spring E is greater than that of the spring 2, so that it takes more power to bend it, always insuring the operation of the switch springs unless the part G is abnormally retarded, which will be the case, for example, when the lock is operated. This superior stiffness will indicate to the operator the locked condition of the mechanism. As the retaining means operates upon the part G, the part *f* will be immediately returned to its normal position by the spring E if an effort is made to operate the circuit controller when locked. It will thus be seen that the principal function of the spring E is to transmit or permit the transmission of motion from the part *f* to the part G when the same is unlocked and to permit relative movement between the two when the part G is locked.

In Figs. 6 and 7 I show a modified form which is adapted to operate one of two sets of contacts when thrown in either direction. In this case the lock bolt N is thrown down between the two arms 18 and 19 upon the part G. In general, the functions and operation of the parts are the same as in the preferred form.

While I have shown only these two forms of my invention, it will be obvious to those skilled in the art that numerous and extensive departures from the form and details of the apparatus here shown, may be made without departing from the spirit of the

invention, as defined by the claims, the same being herein shown solely for the purpose of clearly illustrating it.

I claim:

- 5 1. In an electric circuit controlling device, a contact operating part, means for locking said part in operative position and for preventing the movement of said part to operative position, a power transmitting part and elastic means between said parts adapted to transmit motion from one to the other, said elastic means permitting relative movement between said parts when said locking means is operative.
- 10 2. In an electric circuit controller, a contact operating part adapted to be moved to a normal and an active position, means for locking said part in either position, a power transmitting part, elastic means between said parts, said means adapted to transmit motion between said parts when the former is unlocked and adapted to permit relative motion therebetween when said circuit controlling part is locked in either position.
- 15 3. In an electric circuit controller, a contact operating part adapted to be moved to a normal and to an active position, means for locking said part in either position, a power transmitting part, a spring member between said parts adapted to transmit motion from the one to the other when said locking means is inoperative and adapted to permit relative movement therebetween when said locking means is operated.
- 20 4. In an electric circuit controller, a contact operating part having a normally inactive position, a second or first circuit controlling position and a third or second circuit controlling position, means for locking said part in said first two positions, a power transmitting part, elastic means between said parts adapted to transmit motion therebetween when said locking means is inoperative and adapted to permit relative movement between said parts when said locking means is operated.
- 25 5. In an electric circuit controller, a contact operating part having a normally inactive position, a second or first circuit controlling position and a third or second circuit controlling position, means for locking said part in said first two positions, a power transmitting part, a spring member between said parts adapted to transmit motion therebetween when said locking means is inoperative and adapted to permit relative movement between said parts when said locking means is operated.
- 30 6. In an electric circuit controller, a contact operating part adapted to assume a normally inactive position, an electric switch, said part adapted to assume a second position to operate said switch, a second electric switch said part adapted to assume a third position to operate said second switch, means for locking said part in the first two of said positions, a power transmitting part, a spring member between said parts adapted to transmit movement therebetween when said locking means is inoperative and adapted to permit relative movement between said parts when the locking means is operated.
- 35 7. In an electric circuit controller, a contact operating part adapted to assume three positions, means for retaining said part in two of said positions, means for locking said part in two of said positions, a power transmitting part and elastic means between said parts adapted to transmit motion from one to the other against the resistance of the retaining means but ineffectual to so transmit motion against the resistance of the locking means.
- 40 8. In an electric circuit controller, a contact operating part adapted to assume two positions, means for retaining said part in said positions, means for locking said part in said positions, a power transmitting part, elastic means coupling said parts and adapted to transmit movement therebetween against the resistance of the retaining means but ineffectual to overcome the resistance of the locking means.
- 45 9. In testimony whereof I affix my signature in presence of two witnesses.
- 50

RAY H. MANSON.

Witnesses:

F. L. CLARK,
W. J. H. OUGE.