(No Model.)

J. OLMSTED.

ALARM FOR ELECTRIC LAMPS.

No. 292,761. Patented Jan. 29, 1884.

Fig. 1.

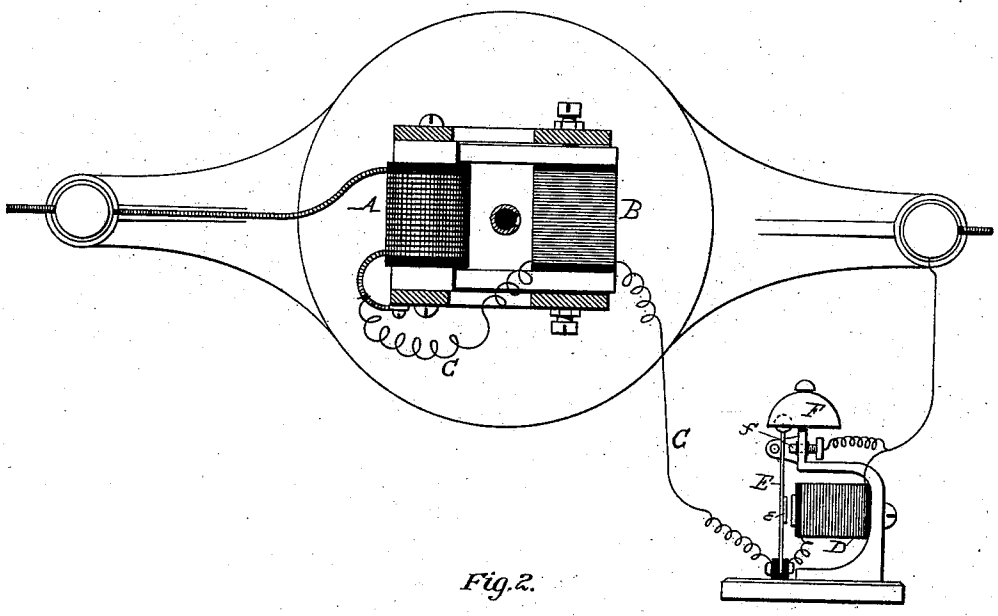
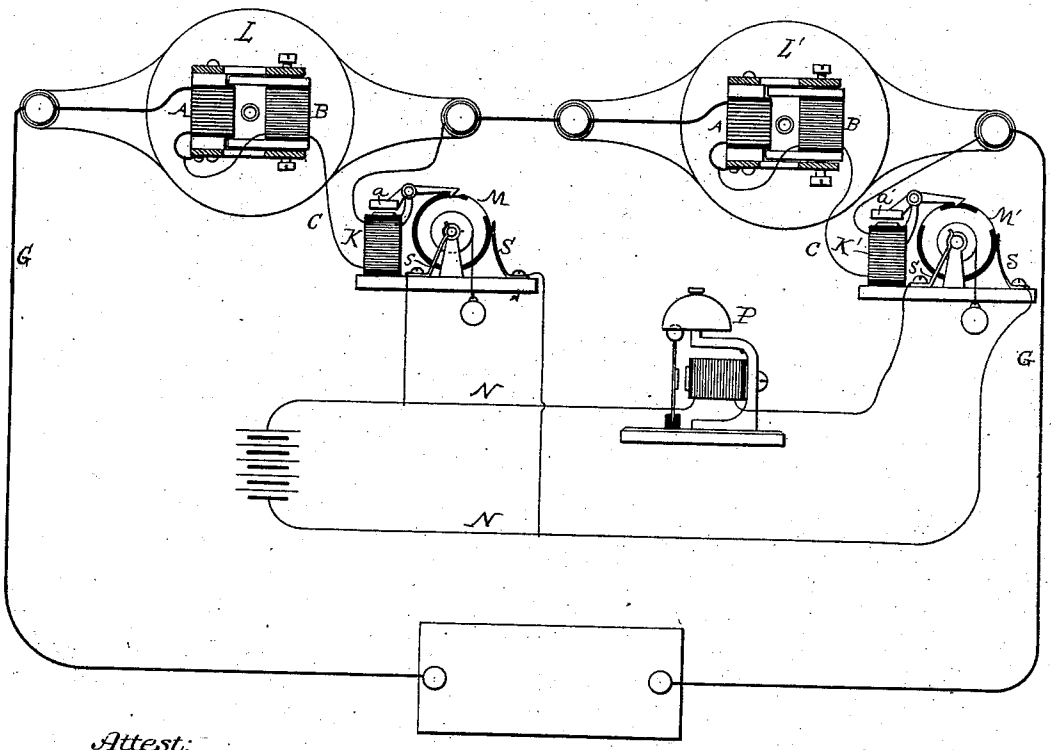


Fig. 2.



Attest:
W. Bailey
R. J. Hood

Inventor:
Joseph Olmsted
By Parker W. Page
atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH OLMSTED, OF NEW YORK, N. Y., ASSIGNOR TO THE OLMSTED ELECTRIC LIGHT AND POWER COMPANY, OF SAME PLACE.

ALARM FOR ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 292,761, dated January 29, 1884.

Application filed June 22, 1882. Renewed November 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH OLMSTED, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

It sometimes occurs, when a number of electric lamps are run in series, that the arc becomes unduly elongated in one or more of the lamps, and that the feed mechanism appears incapable of performing its allotted functions. This elongation, however caused, is likely to injure the lamp in which it occurs, besides disturbing the electrical conditions of the circuit. To prevent the formation of such arcs as injure the lamps, or to protect the lamps when too much resistance is interposed in the main or arc circuit, it has been customary heretofore to employ cut-outs or shunting devices of several kinds. An objection to the use of these devices often arises, from the fact that some are themselves liable to be burned out, while others are not positive in their action, and for this purpose I have devised a plan for preventing injury to the lamps from possible elongations or permanent extinguishments of the arc, by giving a positive and unmistakable warning to attendants or persons in the vicinity of the lamps when such cases arise, and this I accomplish in the following manner: In the derived circuit of an electric lamp I insert an indicating device—such as an electric bell—and so construct or adjust the same that it will not sound until a certain amount of current passes through its magnet. This adjustment is such that diversions of current through the shunt-circuit, due to ordinary elongations of the arc, or similar causes, will not ring the bell; but should the arc be interrupted or abnormally lengthened, the bell will be caused to ring, and will continue to ring as long as the elongation or interruption lasts. By this device attention is directed to lamps in danger, and they may be saved from injury when otherwise the occurrence of a dangerously long arc would pass unnoticed until perhaps it had destroyed a portion of the feed mechanism.

In the accompanying drawings I have illustrated the general character and purpose of my invention.

Figure 1 is a plan view of a single lamp, the derived circuit of which contains an indicating-bell. Fig. 2 is a diagram representing an electric circuit containing an arbitrary number of lamps, and devices included in the derived circuits of the lamps for ringing an alarm or operating an indicator included in a separate circuit.

I would state that the indicating mechanism is especially applicable to lamps having derived circuits, such as are commonly used at the present time. The specific character of the lamps themselves is not, however, described herein in detail.

The various ways in which the invention may be applied will be understood by reference to the drawings.

In Fig. 1, where the cross-bar only of a lamp is shown, A designates the electro-magnet included in the main or arc circuit, and B the magnet in the derived or shunt circuit about the lamp. In this circuit (designated by C C) is included an electro-magnetic device constructed to give, directly or indirectly, an audible signal. In the present case this device is an ordinary alarm-bell that may be placed upon the lamp-frame, or arranged in the immediate vicinity of the lamp. The preferred form of alarm for this purpose consists of a magnet, D, a spring-arm, E, carrying armature *e*, and a bell, F. A contact-stop, *f*, is arranged in the path of movement of the arm E, which latter is in electrical contact with the circuit-wire C C. When the current circulating in magnet D is sufficient to attract the arm E, the movement of the arm cuts out the magnet and immediately recedes. In this way vibratory movement is obtained without interrupting the circuit C.

Instead of using a separate bell for each lamp, one bell may be used for all the lamps of a circuit, and in this case an annunciator may be employed in conjunction with the bell to indicate at once the lamp that requires at-

tention. I prefer, however, to employ the apparatus illustrated in Fig. 2. In this diagram G designates an electric circuit from a generator, H.

L L′ are a given number of lamps included in the circuit, and A and B are the main and shunt magnets, respectively, of the several lamps. In the derived circuits C C of the lamps are electro-magnets K K′, in the face of which vibrate pivoted armatures *a a′*, constructed to operate as detents for disks M M′. These disks are of metal, and are mounted in bearings, so as to turn freely, rotation being imparted to them by clock-work weights or otherwise. Springs S S, connected with the ends of cross-circuits between the conductors N N of a local circuit, including a bell, P, bear upon the peripheries and metallic shafts of the disks M M′. The periphery of disk M is insulated except at one point, that of disk M′ except at two points; or other arbitrary arrangements may be made for the transmission of distinctive signals. Should one of the lamps, as L′, be in danger, as from an abnormally-long arc, its electro-magnet K′ is energized sufficiently to attract the armature *a′* and release the disk M′. For every revolution of the disk the circuit N N is closed twice and two distinct signals made by the bell P, indicating to the attendant that lamp L′ or No. 2 is in danger.

The bell P may be used with an annunciator or indicator in many well-understood ways, if so desired, and in other respects a great many variations of the general plan herein described are possible, the greater number of which at once suggest themselves.

The invention is applicable, generally, to systems or circuits containing electric lamps, and even to such as extend over a considerable space or distance, for considerable time will elapse after the bell begins to ring before the lamp is injured, so that an attendant may reach the lamp in time; or on the ringing of the bell the whole circuit may be instantaneously interrupted, which in most cases will re-establish the normal conditions of the line.

I am aware that indicating mechanism has been used in conjunction with an electric lamp, and that the same has been actuated by the variations in the flow of current in the lamp-circuit. By means of my invention, however, many important results are obtained not possible in such a plan. It is obvious, for instance, that when the main circuit is employed to actuate a signal for indicating a change of condition in a lamp only one lamp can be run in the circuit. Further advantages result from the fact that an abnormal lengthening of the arc, which would be signaled by an indicator in the shunt, would not necessarily be by one in the main circuit, for if the current be a powerful one a simple lengthening of the arc will not generally be sufficient to vary to the requisite degree the flow of current to operate an armature.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with an electric lamp having a shunt or derived circuit, as described, of an electrical device included in said derived circuit, and adapted to give, directly or indirectly, an audible signal, substantially as and for the purpose set forth.

2. The combination, with an electric lamp having a shunt or derived circuit, as described, of a signaling device included in said derived circuit, adapted to operate on a predetermined increase in the flow of current in the derived circuit, as set forth.

3. The combination, with an electric lamp having a shunt or derived circuit, as described, of a signaling device included in said derived circuit, and adapted on a predetermined increase of the flow of current in said circuit to operate without breaking the circuit, as set forth.

4. The combination of a main circuit containing electric lamps, shunt-circuits around each lamp, a local circuit containing an alarm or indicating mechanism, and means, substantially as described, included in or connected with the shunt-circuits, and adapted to operate on a predetermined increase of the current flowing therein, and thereby bring into action the alarm or indicator, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 8th day of June, 1882.

JOSEPH OLMSTED.

Witnesses:
PARKER W. PAGE,
W. HALLETT PHILLIPS.