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W. GOLTZ.

MEANS FOR OPERATING ELECTRIC SIGNS.

APPLICATION FILED DEC. 11, 1902.

NO MODEL.

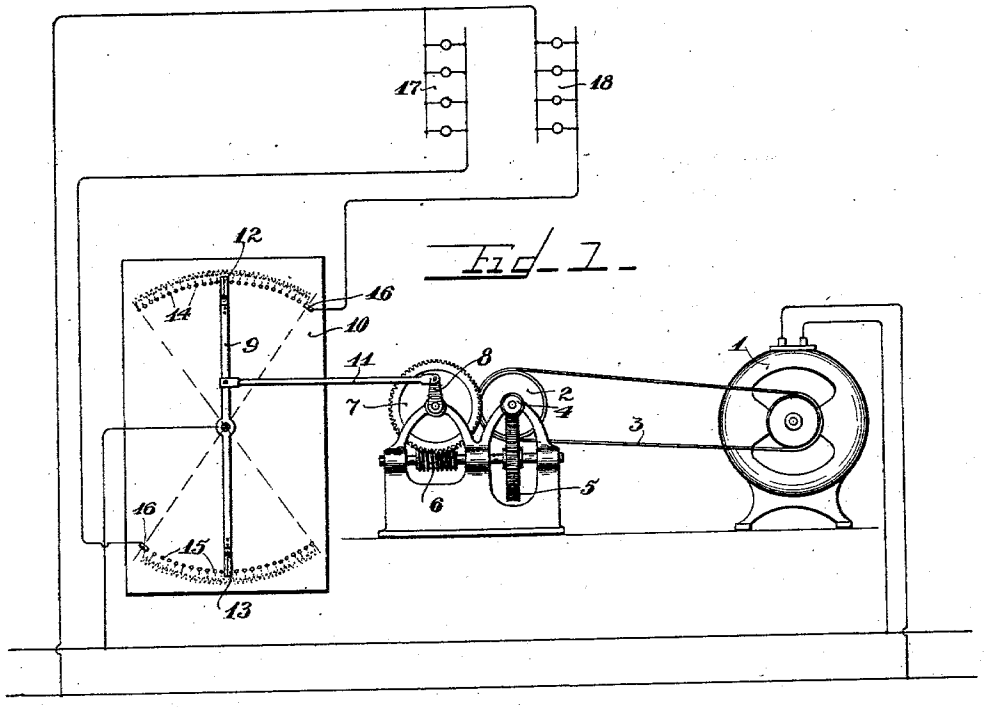


Fig. 1.

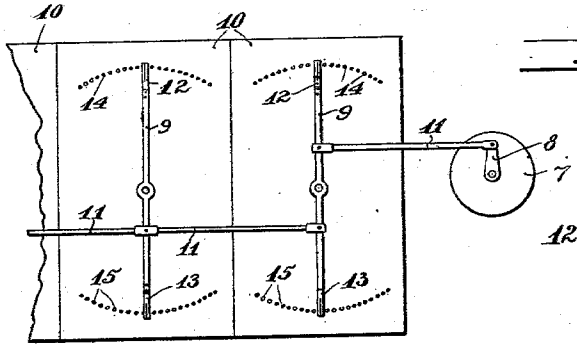


Fig. 2.

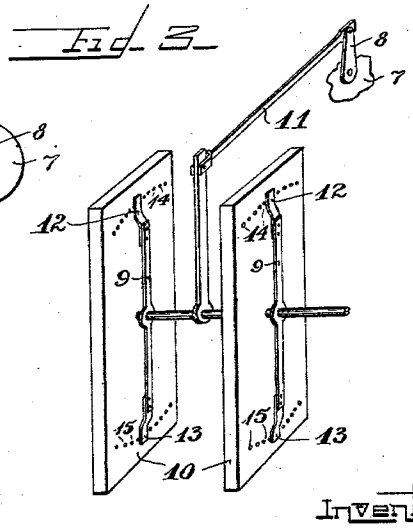


Fig. 3.

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No. 745,488. Patented December 1, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM GOLTZ, OF CHICAGO, ILLINOIS.

MEANS FOR OPERATING ELECTRIC SIGNS.

SPECIFICATION forming part of Letters Patent No. 745,488, dated December 1, 1903.

Application filed December 11, 1902. Serial No. 134,770. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GOLTZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Signs, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to electric signs, particularly to intermittently-illuminated electric signs, and has for its object improved and more efficient means for the operation thereof.

Heretofore to produce intermittent illumination it has been customary to intermittently interrupt the supply-current to the lamps to be illuminated by making and breaking the circuit through which the current flows—as, for example, by means of stationary contacts bearing on interrupted contacts mounted upon a revolving drum or disk. It is evident that this method of operation causes objectionable sparking as the supply-circuits are broken and is consequently detrimental to the contacts which become burned and burred, requiring considerable attention and repair to insure efficient and economical operation of the illuminated lamps. Furthermore, when a great number of lamps are thus suddenly connected into circuit there is apt to be considerable blowing of fuses and other protective devices.

In my improved method of operation I employ resistance, preferably in the shape of a dimmer and adapted to be gradually included in circuit with the lamps to be illuminated. The lamps may thus be operated between the limits of no illumination and full candle-power without breaking of the circuit, thus eliminating all injurious sparking. I employ resistance, preferably in the shape of theater-dimmers, and I provide novel and improved means for actuating the levers of the dimmers and for reducing the high speed of a motive source, such as an electric motor, to a comparatively very low speed suitable for the operation of the dimmers.

To make an electric sign attractive, it is necessary that the lamps thereof be suddenly fully illuminated, that the lamps remain at full illumination long enough to allow the sign to be read, and that the lamps be suddenly darkened. To gain this attractiveness and at the same time including resistance in circuit with the lamps, I provide means for causing the resistance-levers to travel harmonically over their resistance-terminals, the levers passing very quickly over the middle portion of their oscillation and lingering at the ends thereof, during which lingering the lamps of the sign may be at full illumination. To cause full illumination to be continued, the end resistance-contact may be lengthened to retain the lever for a greater length of time. It is thus seen that all the efficiency and attractiveness of the electric sign is retained and at the same time the objectionable sparking heretofore encountered is entirely removed.

I shall describe my invention more in detail and more clearly by referring to the accompanying drawings, in which—

Figure 1 is a diagrammatic view of a sign and the apparatus employed for the operation thereof. Fig. 2 shows a modified arrangement of the apparatus employed. Fig. 3 shows another modified arrangement.

A motive source, preferably a motor 1, connects, preferably by belt, with a train of reduction-gearing consisting of a pulley 2, carrying a belt 3, a worm 4, mounted on a common shaft with pulley 2 and engaging a worm-wheel 5, a worm 6 on a common shaft with worm-wheel 5, and a worm-wheel 7, engaged by said worm 6, all mounted in suitable bearings. A crank 8, mounted in common with worm-wheel 7, transmits oscillatory motion to a contact-lever 9 on a dimmer 10 by means of a connecting-rod 11. Lever 9 is pivoted at its center, its ends 12 and 13 being adapted to travel over resistance-terminals 14 and 15. The connecting-rod 11 so engages lever 9 that as the crank 8 revolves said lever will oscillate between the limits of resistance-terminals 14 and 15. The high rate of revolution of the motor may thus be reduced to any desired rate of oscillation of the lever 9 on the dimmer 10, controlling the illumination of the lamps on the sign. When lever 9 is at the ends of oscillation, the lamps are either dark or at full candle-power, and the connecting-rod-bearing centers and the crank-shaft center will lie in the same plane. The

crank end may move a considerable distance either side of this plane without causing enough motion of the lever ends 12 and 13 to perceptibly affect the illumination. In fact, it may be said that the lever ends have harmonic motion. If it be desired, for instance, to have full candle-power illumination continue a greater length of time, the corresponding end resistance-terminal 16 may be lengthened to give prolonged or lingering contact.

In the drawings I have shown two banks of lamps 17 and 18 controlled, respectively, between resistance-terminals 14 and 15. These lamps 17 and 18 may be grouped on the same or on opposite sides of a sign, and, as shown, one set of lamps may be caused to be dark while the other set is at full candle-power.

By employing a plurality of dimmers, as shown in Fig. 2 or as shown in Fig. 3, or the combination thereof, and by simple changes in circuit connections well known to those skilled in the art, any variety of illumination may be obtained, and I therefore do not wish to be limited to the precise arrangement here- in shown, but—

I claim as new and desire to secure by Letters Patent—

1. The combination of translating devices, connected in an electric circuit, graduated resistance in said circuit, resistance-terminals for said circuit, a contact-lever included in said circuit, and automatic means for causing said lever to travel harmonically over said resistance-terminals.

2. The combination of a plurality of electric circuits, translating devices in said circuits, graduated resistance included in each circuit, resistance-terminals for said resistances, a contact-lever included in each of said circuits for engaging said resistance-terminals, and automatic means for causing said levers to travel harmonically and in unison over said resistance-terminals, substantially as described.

3. The combination with a plurality of lamps, of a dimmer in circuit therewith, a source of rotary motion, and means for transforming said rotary motion into harmonic oscillatory motion whereby the contact-lever of said dimmer may be operated to oscillate harmonically over the resistance-terminals of said dimmer to vary the degree of illumination of said lamps, substantially as described.

4. The combination with a plurality of lamps, of a dimmer in circuit therewith, a source of rotary motion, a crank receiving rotary motion from said source, and a connecting-rod interposed between said crank and the contact-lever of said dimmer whereby said lever may be oscillated harmonically to vary the degree of illumination of said lamps, substantially at described.

5. The combination with a plurality of lamps, of a dimmer in circuit therewith, a source of rotary motion, a crank receiving rotary motion from said source, a connecting-rod interposed between said crank and the contact-lever of said dimmer whereby said lever may be oscillated harmonically to vary the degree of illumination of said lamps, and a train of reduction-gearing interposed between said source and said crank, substantially as described.

6. The combination with a source of rotary motion, of a contact-lever operatively associated therewith to receive harmonic oscillatory motion, resistances and terminals for said resistances over which said lever may travel, whereby the degree of illumination of lamps receiving current through said resistances may be variably controlled, substantially as described.

7. The combination with a source of rotary motion, of a plurality of contact-levers operatively associated therewith to receive harmonic oscillatory motion, a plurality of resistances, and terminals for said resistances over which said levers may travel, whereby the degree of illumination of lamps receiving current through said resistances may be variably controlled, substantially as described.

8. The combination with a source of rotary motion, of a contact-lever operatively associated therewith to receive harmonic oscillatory motion, resistances, terminals for said resistances over which said lever may travel, and a train of gearing interposed between said source and said lever whereby the rate of rotation of said source may be reduced to a suitable rate of harmonic oscillation of said contact-lever, substantially as described.

9. The combination with a source of rotary motion, of a plurality of contact-levers operatively associated therewith to receive harmonic oscillatory motion, a plurality of resistances, terminals for said resistances over which said levers may travel, and a train of gearing interposed between said source and said levers whereby the rate of rotation of said source may be reduced to a suitable rate of harmonic oscillation of said contact-levers, substantially as described.

10. The combination with a source of rotary motion, of a train of gearing driven thereby, a crank receiving rotary motion through said gearing, resistances and terminals therefor, a contact-lever adapted to travel over said terminals, and a connecting-rod interposed between said crank and said contact-lever whereby said lever may be oscillated to vary the degree of illumination of lamps receiving current through said resistances, substantially as described.

11. The combination of a contact-lever, resistance, a series of terminals for said resistance over which said lever may travel, a source of rotary motion, and means whereby said rotary motion may be transformed into approximately harmonic oscillatory motion of said lever, substantially as described.

12. The combination with a source of rotary motion, of a contact-lever operatively associated therewith to receive oscillatory motion, resistance and a series of terminals for said

resistance over which the ends of said lever may travel, and means for causing a lingering or prolonged contact at the ends of oscillation, substantially as described.

13. The combination with a source of rotary motion, of a contact-lever operatively associated therewith to receive oscillatory motion, resistance and a series of terminals for said resistance over which the ends of said lever may travel, an end terminal of said series being lengthened to prolong the contact, substantially as described.

14. In a device of the class described, the combination with a source of electric current, of a circuit therefrom, translating devices and a graduated resistance in said circuit, and automatic means for harmonically varying the resistance in said circuit, substantially as described.

15. In a device of the class described, the combination with a source of electric current, of a circuit therefrom, translating devices and a graduated resistance in said circuit, means for periodically varying the resistance in said circuit, and means for regulating the rate at which resistance is excluded from or included in said circuit, substantially as described.

In witness whereof I hereunto subscribe my name this 8th day of December, A. D. 1902.

WILLIAM GOLTZ.

Witnesses:
LYNN A. WILLIAMS,
CHARLES J. SCHMIDT.