Aug. 3, 1937. H. H. MORETON 2,089,131

CLOCK

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FIG. 1.

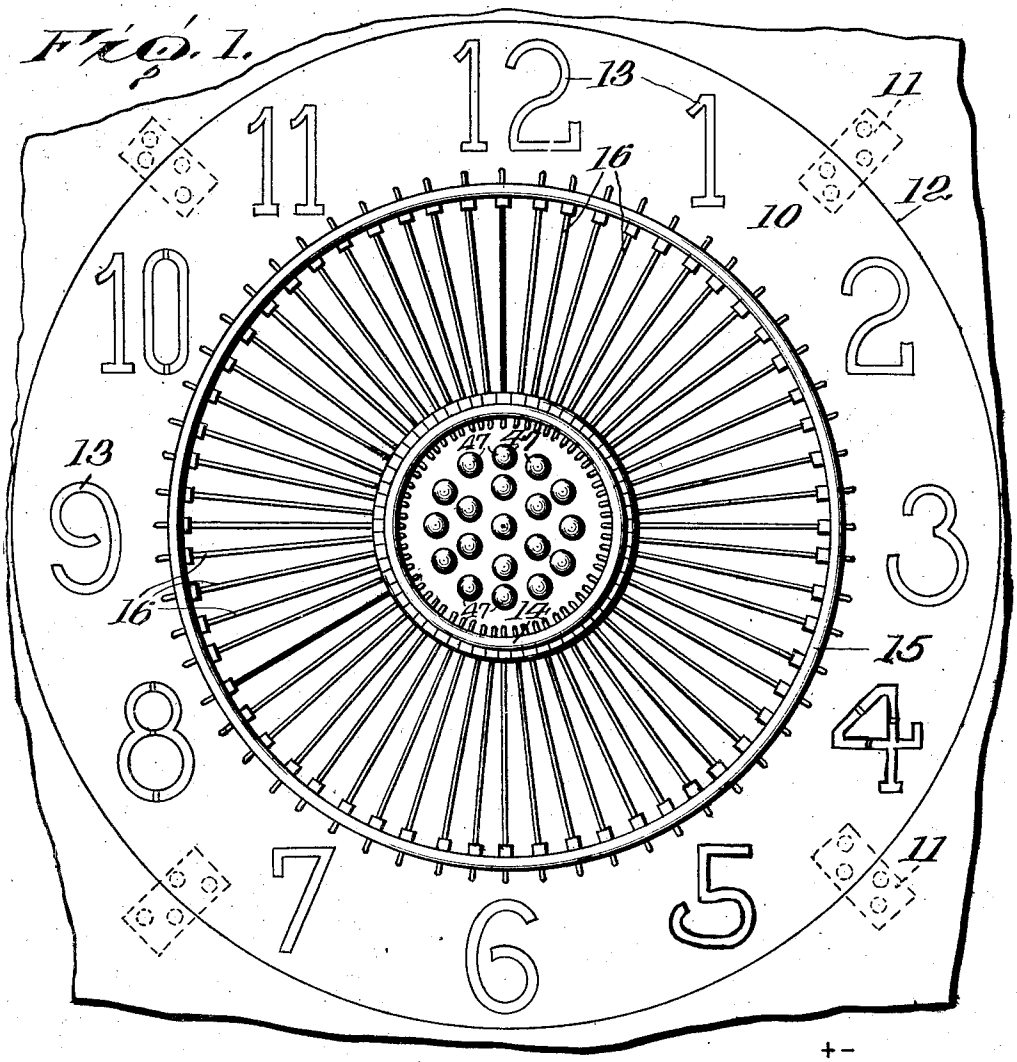
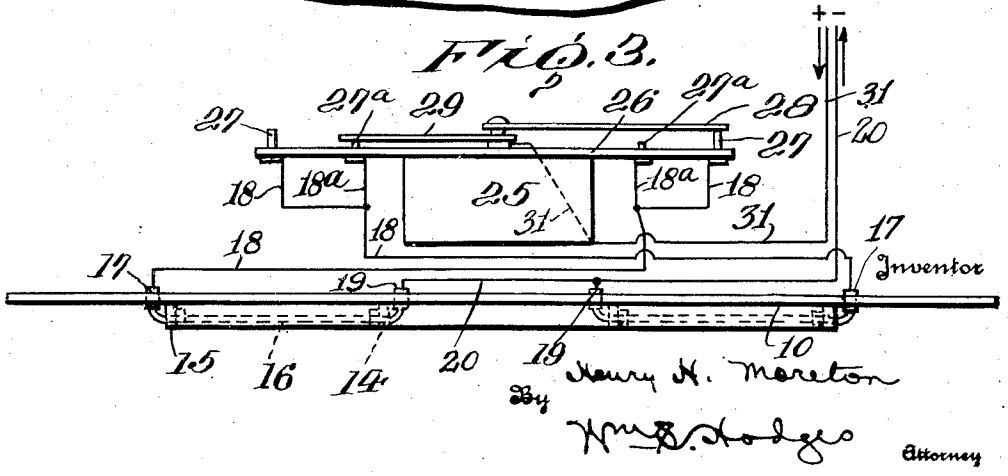


FIG. 3.



Inventor

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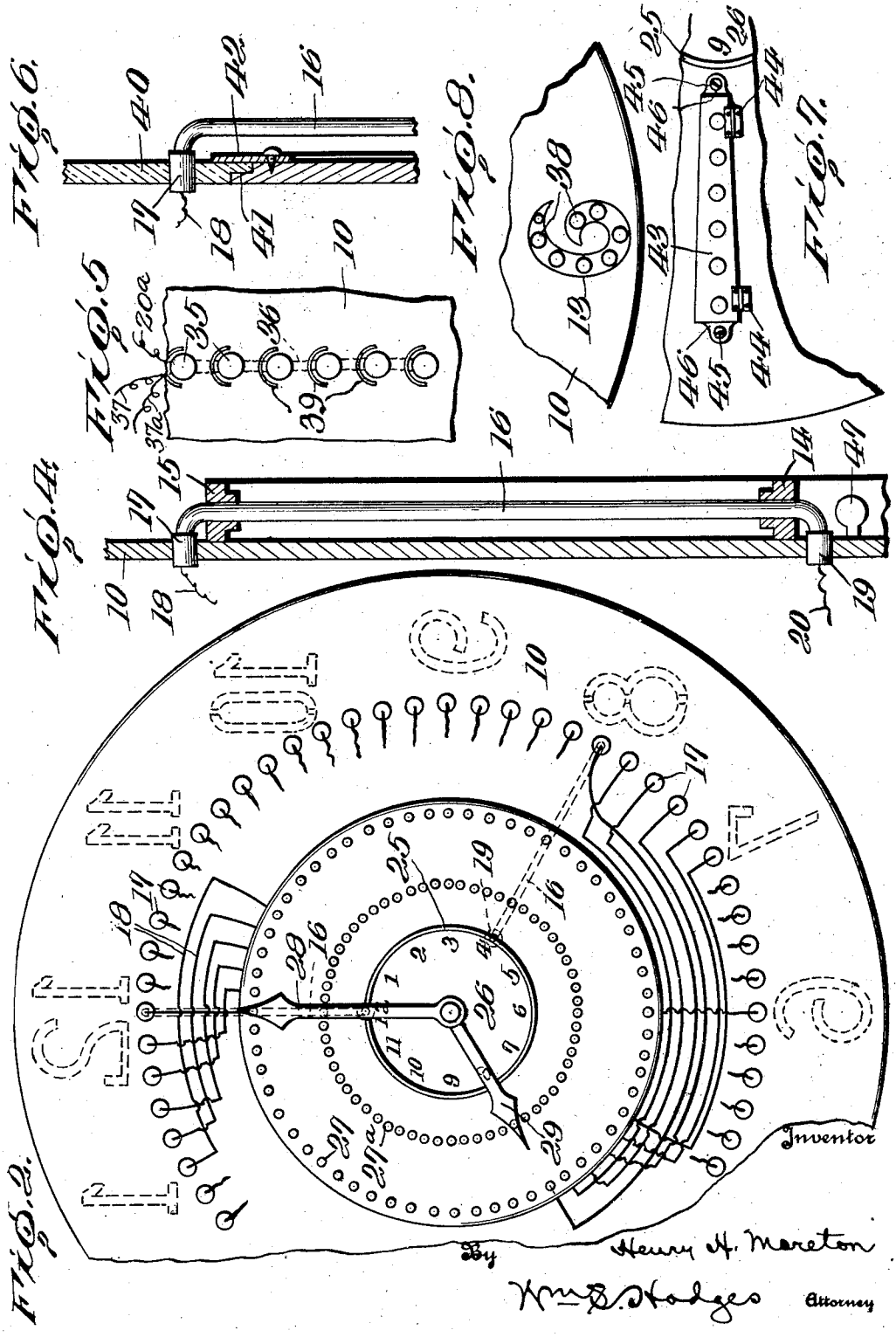
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CLOCK

Filed March 10, 1934 2 Sheets-Sheet 2



Patented Aug. 3, 1937 2,089,131

UNITED STATES PATENT OFFICE

2,089,131

CLOCK

Henry H. Moreton, Santa Monica, Calif.

Application March 10, 1934, Serial No. 715,011

9 Claims. (Cl. 58—50)

This invention is a clock primarily designed for installation in towers and other public places where time pieces of large dimensions are required, but is not limited to this particular type of installation.

With respect to clocks of large sizes, such as those usually mounted on church towers, public buildings and the like, where it is desired to position the clock face so that it may be observed from substantial distances, it is well known that the winding of the clock presents serious difficulty, and that this condition imposes a decided limitation upon the sizes of practical installations of this character. For instance, in the case of many of the large clocks now in use, motors capable of developing considerable power are required to wind the clock mechanism, and the larger the clock, the larger and more expensive the winding motor must be, and this situation is complicated by the engineering problem of safely supporting the great weight of the mechanism involved.

One of the objects of the invention is to overcome the foregoing disadvantages by providing a clock which may be constructed of any desired size, limited only by the space available for its installation, and which avoids the necessity of employing heavy and cumbersome winding apparatus. A further object is to provide a clock of the character mentioned capable of visibility at long distances, both day and night, and in which the number of moving parts is reduced to a minimum. A further object is to provide a clock having the above characteristics which may be installed in a tower, public building, or the like, or which may be utilized as a part of a large advertising sign.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings:—

Figure 1 is a face elevation illustrating a clock constructed in accordance with the invention. Figure 2 is a rear view thereof. Figure 3 is a top plan view. Figure 4 is a transverse vertical sectional view of a part of the clock face. Figure 5 is a front view of a portion of the clock face illustrating a slight modification. Figure 6 is a detail sectional view illustrating a modification of the clock face. Figure 7 is a detail view illustrating a modification of the means for supporting the sources of illumination extending across the clock face. Figure 8 is a view illustrating a modification of the clock numerals.

Referring to the drawings, 10 indicates a clock face which may be supported in any desired manner. For purposes of illustration, it is shown as supported by means of brackets 11, secured to the walls of an opening 12, in a tower or other portion of a building in which the clock is to be installed. As illustrated in Figure 1, the clock face is provided with a plurality of numerals 13, corresponding to the ordinary numerals on the face of a standard timepiece, said numerals being formed by cutting slots through the face of the clock, said slots having the contours of said numerals. Arabic numerals are shown for purposes of illustration, but it is obvious that roman numerals, or any other form of time indicating indicia now commonly employed may be substituted without departing from the spirit of the invention.

Said clock face, as shown in Figures 1 to 4 both inclusive is provided with two supporting rings 14 and 15 concentrically disposed with respect to each other, said rings supporting a plurality of radially disposed illuminating devices 16. For the purposes of illustration these devices are here conventionally shown as neon lamps, each provided at its outer end with a socket 17 adapted to be connected in suitable manner with the positive side of a source of power, such as the usual current normally furnished by power companies for public consumption. The inner end of each of said lamps is provided with a socket 19, which is connected with the return or ground wire 20, in the usual manner. The art of installing neon lamps is well understood, and no attempt is made to describe the construction of the lamps in detail, it being considered sufficient to illustrate these parts conventionally. It will be noted that there are 60 of these radially disposed illuminating devices 16, corresponding with the sixty minute divisions usually indicated upon the face of a standard timepiece having twelve hour indicia. It is obvious, of course, that the number would be increased to 120 if a clock of twenty-four hour indicia should be desired.

Suitably supported back of the clock face 10 is a timing mechanism, which may be any standard timepiece such as a small clock 25, having a dial 26 of insulating material, provided with the minute divisions corresponding to the number of tubes 16 on the clock face. The timing mechanism may be wound in any usual way, well known in connection with small clocks. Said timing mechanism 25 is provided with two sets of electrical contacts 27 and 27^a, each of which corresponds in number with the number of lamps 16, and the contacts of both sets spaced in circular lines to correspond to the minute spacing on a

standard timepiece. The contacts of the set 27 are connected by the wires 18 to sockets 17, of the lamps 16 occupying the respective positions which correspond to the relative time indicating positions of the contacts 27. The contacts 27a are also similarly connected to said sockets 17 by means of branch wires 18a which connect said contacts 27a with the respective wires 18 (see Figure 3). In this connection, it will be noted that the face of the timing device 25 is reversed with respect to the clock face 10 and hence the positions of the contacts 27 will be reversed with respect to the positions of the sockets 17. Said timing mechanism 25 is provided with the usual minute-hand 28 and hour-hand 29 as in a standard clock, the end of said minute-hand 28 being positioned to successively engage the contacts 27 during the operation of said timing mechanism. The end of the hour-hand is positioned to successively engage the contacts 27a, but both hands are so arranged that neither will engage the contacts designed to be engaged by the other hand. The said hands are both operatively connected with a feed-in wire 31, leading from a source of current (not shown).

By the arrangement thus far described, it will be noted that as the minute-hand engages one of the contacts 27, the lamp 16 in circuit with the particular contact will be illuminated, the circuit being from wire 31 through the minute-hand 28, contact 27, conductor 18, socket 17, lamp 16, socket 19 and to the return or ground wire 20. The closing of this circuit establishes an illuminated line which simulates the minute-hand indication of a standard timepiece. At the same time, the hour-hand 29 is engaged with one of the contacts 27a, so that the circuit will be from wire 31 through hand 29, contact 27a, wire 18a, socket 17, the corresponding lamp 16, socket 19 and ground wire 20 of the last mentioned lamp. Thus, two lamps 16 are illuminated, one simulating the position of the minute-hand of a clock and the other simulating the corresponding position of the hour-hand of a clock. It is to be understood that the width of those portions of each of the hands 28 and 29, which engage the respective contacts 27, 27a is such that contact is maintained until the instant before the hand moves in engagement with the next successive contact. In this way, the indication is practically continuous except for the instantaneous interruptions during the successive breaks in the circuits, so that there is not only an accurate indication of the time, but attention is attracted to the clock face by the successive shutting off of illumination and the instantaneous flashing on again, as the hands 28 and 29 travel around the face 26.

In lieu of employing neon lights as described in connection with Figures 1, 2, 3 and 4, standard type lamp sockets 35 may be arranged in corresponding radial lines as indicated in Figure 5, and connected by the usual circuit wires 36, the contacts 27 and 27a being connected by conductors 37 and 37a to one side of the lamp sockets 35, and the sockets being grounded on the other side by wire 20a.

In order that the clock numerals and the radial lines of illumination may be visible both night and day, it is preferred in the form illustrated in Figure 1 to coat the clock face with a black surface, so that there will be no reflection of light from the sun rays striking the clock. The visibility may be additionally improved by placing orange colored lamps 38, for instance, back of the openings forming the numerals 13 (see Fig. 8), and particularly if a hood 39 is placed in a position to overshadow the numerals, as shown in Figure 5, the illumination of said figures will be clear both day and night. This is a principle which has long been in use in connection with railway block signaling. The hoods 39, however, while helpful are not absolutely essential and may be used or omitted, as desired, without departing from the spirit of the invention. Or the portion of the clock face which carries the clock numerals 13, may be formed of translucent material, such as glass, the surface of which is treated so that it will not reflect the sun rays. For instance, as shown in Figure 6, the peripheral portion of the clock face may be made up of sections 40, of such glass, which fit within complemental cut-out portions 41 on the main body of the clock face, and are held in position by suitable clamps 42, as shown in Figure 6.

For convenience, in renewing lamps which may be burned out, it might be desirable to mount the illuminating elements upon panels 43, which are removably secured to the back of the clock face, as shown in Figure 7. These panels are movably supported by means of hinges 44 which are normally held in operative position by suitable securing devices, such as screws 45, passed through lugs 46. By removing the screws and swinging the panel back upon its hinges, burned out lamps may readily be removed and replaced, this being equally true whether the neon type, or the ordinary socket type of lamp is used.

If desired, the central portion of the clock face may be illuminated by lamps 47, arranged in any desired design, as shown in Figure 1.

The advantages of the invention will be readily appreciated by those skilled in the art to which it belongs. An important advantage is that there is no limitation imposed upon the diameter of the clock face by the necessity of providing a motor for winding the clock mechanism. This is largely because the only thing required to maintain the clock in operation is a standard clock of small size, capable of being wound by hand, and provided with the electric contacts as herein described. Such a clock need not be any larger than the dimensions required to provide sufficient area for the accurate spacing of the contacts 27 and 27a. A further advantage is that the device is exceedingly simple in construction, and by means of the radially disposed lines of illumination the positions of moving hands of a standard timepiece are simulated, and at the same time the change from minute to minute is indicated by a turning off and flashing on of the successive lines of illumination. If the contact portions of the hands 28 and 29 are made wide enough, two adjacent contacts 27 or 27a, as the case may be, may be momentarily engaged at the same time, so that the change in time will be indicated by first energizing two adjacent lines of illumination, and the almost instantaneous subsequent cutting out of one of said lines. An important advantage is that the clock is not only capable of use on towers, buildings and other structures in which it is desirable to provide a clock of large dimensions, which can be seen from a great distance, but obviously it could also be made to play an important part in making up of advertising signs. The clock may also be constructed, as indicated, so that the illuminated lines and figures may possess equal visibility both day and night.

Having thus explained the nature of the invention and described an operative manner of constructing and using the same, although with-

out attempting to set forth all of the forms in which it may be made, or all of the forms of its use, what is claimed is:—

1. A clock of the character described comprising a clock face provided with a circularly arranged series of time-indicating characters, a plurality of illuminating members arranged in uniformly spaced radial lines extended across said clock face in positions corresponding to the positions successively assumed by the moving hands of a standard type time-indicating clock, relatively spaced fixed contacts arranged in pairs with each pair connected with one end of an illuminating member, said fixed contacts being arranged in two groups, a feed-in wire, timing means for selectively and independently connecting the feed-in wire with the respective fixed contacts in predetermined order, and return wires connected with the other end of each illuminating member.

2. A clock of the character described comprising a clock face provided with a circularly arranged series of time-indicating characters, a plurality of illuminating members arranged in uniformly spaced radial lines extended across said face in positions corresponding to the positions successively assumed by the moving hands of a standard type time-indicating clock, relatively spaced fixed contacts arranged in pairs with each pair connected with one end of an illuminating member, said fixed contacts being arranged in two groups, a feed-in wire, movable contacts connected with said feed-in wire, there being one movable contact for each group of fixed contacts, timing means for successively and continuously moving the movable contacts in a normally fixed direction, and return wires connected with the other end of each illuminating member.

3. A clock of the character described comprising a clock face provided with a circularly arranged series of time-indicating characters, a plurality of illuminating members arranged in uniformly spaced radial lines extended across said face in positions corresponding to the positions successively assumed by the moving hands of a standard type time-indicating clock, a plurality of relatively spaced fixed contacts arranged in pairs, each pair being connected with one end of an illuminating member, said fixed contacts being arranged in two groups, a feed-in wire, a standard type clock including coordinated hour- and minute-hands connected with said feed-in wire, each set of fixed contacts being located adjacent the path of movement of a hand in such manner that the respective fixed contacts are successively and independently connected with the main circuit in predetermined order, and means for grounding the other ends of said illuminating members.

4. A clock of the character described comprising a clock face provided with a series of time-indicating characters, a plurality of illuminating members, means for removably supporting the respective illuminating members in radial lines extended across said face in positions corresponding to the positions successively assumed by the moving hands of a standard time-indicating clock, two groups of stationary contacts, one contact of each group being connected to one end of an illuminating member, a feed-in wire, timing means for selectively and independently connecting said feed-in wire with the respective fixed contacts in a predetermined sequence, and means for grounding the other ends of said illuminating members.

5. A clock of the character described comprising a clock face provided with a circularly arranged series of time-indicating characters in the form of openings shaped to the contour of the respective characters, a plurality of illuminating members arranged in spaced radial lines extended across said face in positions corresponding to the positions successively assumed by the moving hands of a standard type timepiece, relatively spaced fixed contacts arranged in pairs, each pair being connected with one end of an illuminating member, said contacts being arranged in two concentric circles, a feed-in wire, timing means for selectively and independently connecting said feed-in wire with the respective fixed contacts in a predetermined sequence, means for grounding the other ends of said illuminating members, and illuminating means placed behind each of the time-indicating characters.

6. A clock of the character described comprising a clock face, a peripheral portion provided with time-indicating characters, means for removably supporting said peripheral portion, a plurality of illuminating members arranged in uniformly spaced radial lines extended across said face in the space enclosed by said removable peripheral portion and in positions corresponding to the positions successively assumed by the moving hands of a standard timepiece, pairs of fixed contacts, each pair being connected with one end of an illuminating member, said fixed contacts being arranged in two concentric circles, a feed-in wire, timing means for selectively and independently connecting said feed-in wire and said fixed contacts and in predetermined sequence, and means for grounding the other ends of said illuminating members.

7. A clock of the character described comprising a clock face provided with a circularly arranged series of time-indicating characters, a pair of annular supporting rings carried by said face, a plurality of elongated lamps supported by said annular rings and arranged in uniformly spaced radial lines extended across said face in positions corresponding to the positions successively assumed by the moving hands of a standard timepiece, pairs of fixed contacts, each pair being connected to one end of a lamp, said fixed contacts being arranged in two concentric groups, a feed-in wire, timing means for selectively and independently connecting said feed-in wire to the respective circuits through the fixed contacts and in predetermined sequence, and means for grounding the other ends of said lamps.

8. A clock of the character described comprising a clock face provided with a circularly arranged series of time-indicating characters, a pair of concentric supporting rings carried by said face, a plurality of elongated lamps supported by said concentric rings and arranged in uniformly spaced radial lines extended across said face in positions corresponding to the positions successively assumed by the moving hands of a standard timepiece, pairs of fixed contacts, each pair being connected with an end of a lamp, said fixed contacts being arranged in two concentric groups, a feed-in wire, movable contacts connected with said feed-in wire, there being one movable contact for each concentric group of fixed contacts, timing means for coordinately and successively moving said movable contacts in a normally fixed direction in such manner as to successively close the circuits to said lamps in a

predetermined sequence, and means for grounding the other ends of said lamps.

9. A clock of the character described comprising a clock face provided with a circularly arranged series of time-indicating characters, a pair of annular supporting rings carried by said face, a plurality of elongated lamps supported by said annular rings and arranged in uniformly spaced radial lines extended across said face in positions corresponding to the positions successively assumed by the moving hands of a standard timepiece, pairs of fixed contacts, each pair being connected to one end of a lamp, said fixed contacts being arranged in two concentric groups, a feed-in wire, means for grounding the other ends of said lamps, and a standard type clock including hour- and minute-hands both normally connected with said feed-in wire, each group of fixed contacts being located adjacent the path of movement of a hand in such manner as to independently connect the feed-in wire with the respective contacts in a predetermined sequence.

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