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PATENTED FEB. 19. 1907.

S. M. MEYER.

ELECTRIC LIGHTING DEVICE FOR LAMPS AND OIL STOVES.

APPLICATION FILED MAR. 20, 1905.

2 SHEETS—SHEET 1.

FIG. 1.

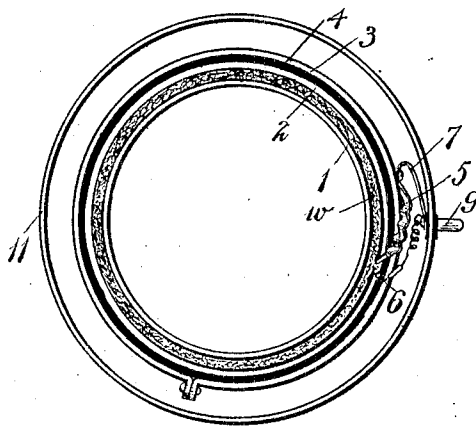


FIG. 7.

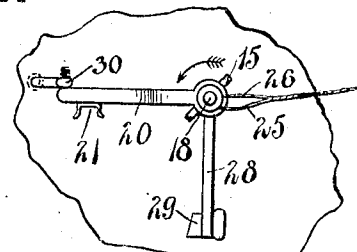


FIG. 8.

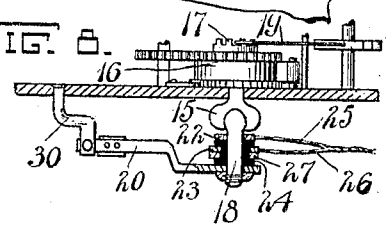


FIG. 6.

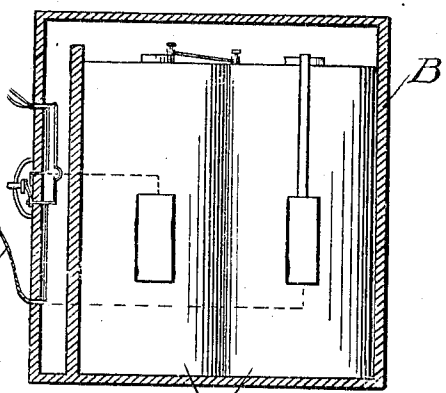


FIG. 3.

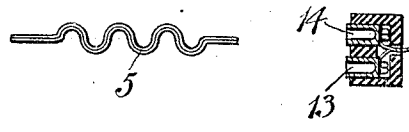


FIG. 2.

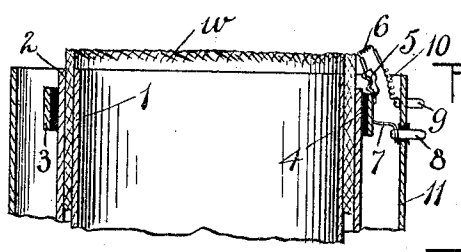


FIG. 4.

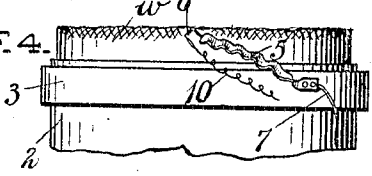
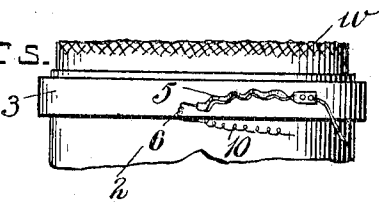


FIG. 5.



Witnesses
S. J. Heister
W. P. Hammond

Inventor
S. M. Meyer
By his Attorneys, Knight Bros

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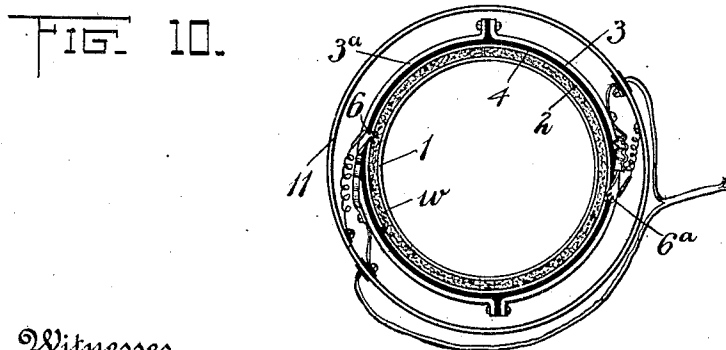
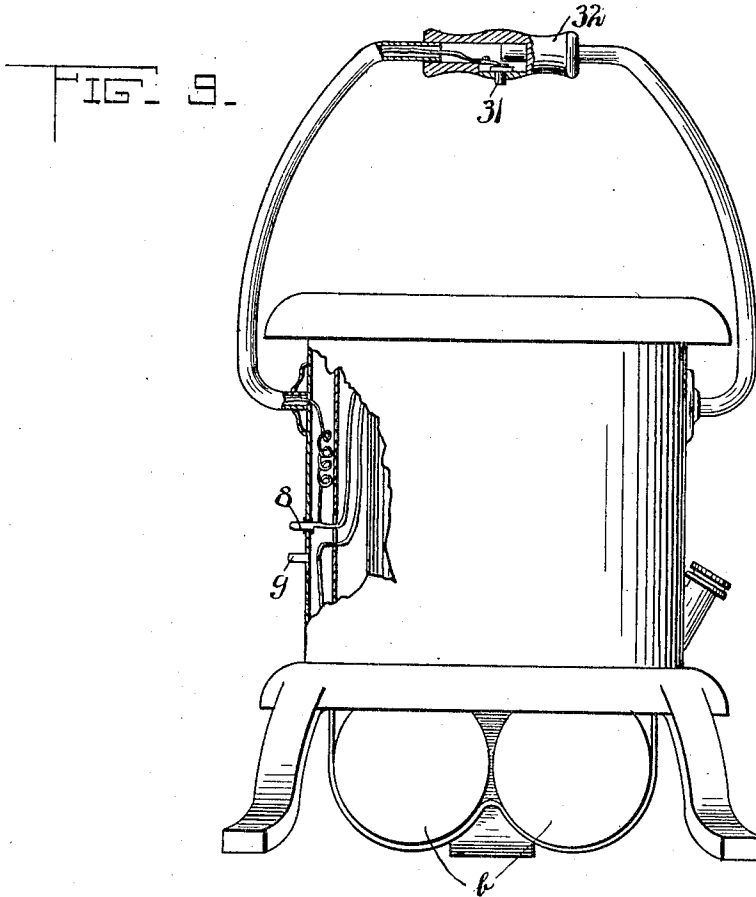
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2 SHEETS—SHEET 2.



Witnesses
S. J. Royster
W. P. Hammond

Inventor
S. M. Meyer
By his Attorneys
Knight Bros

UNITED STATES PATENT OFFICE.

SVEND MARTIN MEYER, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE C. BATCHELLER, OF NEW YORK, N. Y.

ELECTRIC LIGHTING DEVICE FOR LAMPS AND OIL-STOVES.

No. 844,605.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed March 20, 1905. Serial No. 251,089.

To all whom it may concern:

Be it known that I, SVEND MARTIN MEYER, a citizen of the United States, and a resident of the borough of Brooklyn, in the city and State of New York, have invented certain new and useful Improvements in Electric Lighting Devices for Lamps and Oil-Stoves, of which the following is a specification.

My invention relates in part to mounting an igniting-coil or its equivalent on a self-acting thermo attachment in such position that after ignition the heat of the flame will cause the automatic movement of the igniting device away from the flame, such movement being in an approximately vertical plane, and hence nearly parallel with the wick-tube. This mode of mounting the igniting and thermo-retracting device permits its operation within the annular space between the wick-tube and the cylinder surrounding the same and enables ready application of my improved lighting device to a lamp already in use.

My invention further relates to mounting such thermo-retracting device on an insulated tube forming part of the burner of the lamp or oil-stove, through which insulated tube and suitable insulated conductors one end of the igniting-coil is electrically connected with one pole of a battery, which may be detached from the lamp or stove, and connecting the other end of the igniting-coil with the second pole of the battery through the medium of a flexible wire or conducting-cord connected to the body of the lamp-burner, with which the second pole of the battery is also connected.

My invention further relates to combining with an automatic lighting device of the character herein set forth an automatic circuit-closer, controlled by clockwork, so as to automatically close the circuit and light the lamp at a predetermined period.

My invention further relates to a special adaptation of my automatic lighting device to oil-stoves, for which purpose I prefer to employ two or more automatic lighters, connected either in series or in multiple with a common battery-circuit and located equidistantly around the wick, so as to light a cylindrical wick of large size at several remote points simultaneously.

My invention further relates to the combination, with an automatic lighting device for

lamps or oil-stoves, of a detachable battery and means for connecting the same with the lamp or stove, so as to supply the igniting-current.

In the accompanying drawings, Figure 1 is a plan view of a lamp or stove burner with my automatic lighting device applied. Fig. 2 is a vertical section of the same. Fig. 3 is a detail elevation of the thermal arm, by which the position of the igniting-coil is controlled. Figs. 4 and 5 are detail elevations showing the thermally-controlled lighting device in the two positions which it assumes before and after lighting the wick. Fig. 6 is a sectional view of a detached battery and connections, adapted for application to the lamp or stove to supply the igniting-current to the lighting device. Fig. 7 is a detail elevation of a time-controlled circuit-closing device, adapted in connection with the electric lighting device to effect the lighting of a lamp or stove at a predetermined period. Fig. 8 is a horizontal section of the same. Fig. 9 is an elevation, partly in section, of an oil-stove with the invention applied. Fig. 10 is a horizontal section of the same.

1 2 indicate the two concentric walls of the wick-tube, and *w* represents the upper portion of a wick in the preferred annular form, though this particular form of wick is not essential to my improved electric lighting device, which is the subject of this application.

A metal ring 3 is clamped around the wick-tube near its top, over a body 4, of mica or other suitable insulating and incombustible material. To the outside of the insulated ring 3 is fixed one end of the thermal controller 5, consisting of a ribbon of zigzag shape, formed of two bodies of metal of diverse expansibility by heat—copper and steel, for example. This thermal controller carries at its free end the incandescing coil 6 and is so fixed in nearly horizontal position on the outside of the wick-tube that when cold or at normal atmospheric temperature it will support the igniting-coil 6 in proximity to the top of the wick *w*, as shown in Figs. 2 and 4, so as to ignite the wick when the current passes through said coil, and after lighting the heat of the burner, causing excessive expansion in the copper side of the ribbon, will deflect the thermal controller downward and away from the wick *w*, as illustrated in Fig. 5, so that the incandescing coil 6 will be

removed beyond danger of injury from the flame. In order to convey the electric current to and through the lighting-coil 6 and at the same time permit its automatic movement toward and away from the end of the wick under changes of temperature, as explained, a conducting-wire 7 is fixed at one end to the insulated ring 3, or to the thermal controller 5, mounted thereon, and at the other end connected to a contact-stud 8, to be connected with one pole of the battery, and the free end of the lighting-coil 6 is connected by the flexible conducting wire or cord 10 to the second contact-stud 9, which is to be connected to the second pole of the battery.

The manner shown of mounting the thermal controller 5 on the insulated ring 3 in nearly horizontal position and in position to be deflected obliquely downward and outward by the effect of the heat enables me to locate it and adapt it to work successfully within the annular space between the wick-tube and the outer shell 11 of the burner, where the said controller is concealed and effectually protected from injury.

The delivery of current to the contact-studs 8 and 9 is preferably effected from a battery *b* separate from the lamp, contained in a portable box B, through a cord 12, containing, as usual, two insulated conducting-wires connected with the respective poles of the battery, and terminating in contact-sockets 13 14, fitting over the respective contact-studs 8 9 and effecting electric connection therewith.

Part of my invention may be carried into effect with the use of a push-button or other manually-operated circuit-closing device. I have, however, devised a special and novel device by which the electric circuit may be closed automatically and an illuminating-lamp or oil-stove ignited automatically at a predetermined period. This is best effected by means of a clockwork of simple construction, such as commonly employed in alarm-clocks, and in which the tripping or release of a detent at the set time effects the closing of the electric circuit and igniting of the lamp or stove. An illustrative device for this purpose is shown diagrammatically in Figs. 7 and 8. In these figures, 15 indicates a winding-arbor similar to that of the alarm movement of an alarm-clock adapted to store power in an ordinary clock-spring 16, the power being held by a ratchet-detent 17. The power is transmitted from the spring 16 to the shaft 18, when the detent 17 is released at a predetermined hour by a suitable catch 19, tripped by the hour-hand arbor, as in the common alarm movement of a clock. The shaft 18 may constitute the alarm-shaft of an alarm-clock movement and will be referred to as the "alarm-shaft" for distinction; but it is not essential to my

invention that the said shaft 18, the particular operation of which I will now explain, shall be used also for the purpose of an alarm. On the alarm-shaft 18 is an arm 20, in rigid connection with and driven by said shaft and carrying a contact-clip 21. The shaft 18 turns loosely in two stationary disks 22 23, the first of which is in electrical connection with the shaft, while the disk 23 is insulated therefrom by a bushing 24. The disks 22 23 are in electrical connection, respectively, with the positive and negative conducting-wires 25 26 from the battery. A loose disk 27 is also insulated from the shaft 18 by the bushing 24, on which it turns freely. A contact-arm 28 depends from the disk 27, and as the disk 27 is in electrical contact with the disk 23, connected to the wire 26, while the contact-arm 20 is connected electrically through the shaft 18 and disk 22 with the opposite wire 25, it will be apparent that the electric circuit may be closed by bringing together the two contact-arms 20 and 28. This is effected in the following manner: The alarm-shaft 18 being released by the tripping of its detent at the appointed hour after the manner of an alarm-clock movement, the said shaft runs in the direction indicated by the arrow in Fig. 7, carrying the arm 20 in its rotation. When one-fourth of a revolution has been accomplished, the contact-clip 21 on the arm 20 comes in contact with the head 29 on the loose pendent arm 28, which completes the electric circuit and effects the lighting of the lamp or stove wick by the means already described. The driven arm 20, picking up the loose arm 28, carries the latter with it in its revolution, or at least until its uppermost position is reached. Hence the electric lighting device will continue in effective operation during at least one-half of a complete revolution of the shaft 18. When the arm 20 has completed one revolution, its movement with that of the shaft 18 is arrested by an adjustable stop 30, which may consist of a simple crank rotatable in the frame and held by sufficient friction to stop the alarm-shaft 18 and its driven arm, but adapted to be turned by hand into or out of the path of the latter. In operation when the rotation of the arm 20 is arrested by contact with the stop 30, the loose arm 28 being of less length escapes the said stop and falls by gravity to its original position, thereby breaking the electric circuit. By this embodiment of the invention a stove and self-lighting and clockwork attachment may be so set and arranged that simultaneously with or at any desired interval before the springing of the alarm to awaken the sleeper the heating-stove may be automatically lighted, so as to warm the room before the user arises from his bed.

Figs. 7 and 8 represent the contact-arms

20 and 28 in the normal positions in which they rest in readiness for operation by the clockwork device, the arm 20 being sustained in horizontal position by the clockwork, while the arm 28 hangs vertically by gravity and the stop-crank 30 having been turned from its stopping position beneath the arm 20 to a position above the same preparatory to the next operation.

10 In Fig. 9 I have shown the invention applied to a portable oil-stove, with batteries *b* in the base or with contact-studs 8 9 and a battery and connections, such as shown in Fig. 6. I have also shown in this figure an electric circuit to be closed by a push-button 31 in the carrying-handle 32, where the time-controlled lighting device is not used.

15 In Fig. 10 I have illustrated a mode of lighting the wick of an oil-stove at two remote points simultaneously. In this illustration two half-rings 3^a and 3^b, separately insulated, are employed and two lighting-coils 6^a and 6^b connected in series.

20 Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent—

1. In an electric lighting device for lamps and oil-stoves, the combination with the wick-tube of a cylindrical shell or casing surrounding the same, a thermally-deflected arm consisting of united ribbons of diversely-expansible metals in zigzag form mounted within the annular space between said tube and casing in position to be deflected downward in the annular space by the effect of heat, an incandescing coil mounted by one end on the free end of the thermal arm, a flexible support for the other end of the incandescing coil and means connecting the
40 respective ends of the incandescing coil with

the opposite poles of a suitable source of electricity.

2. In an electric lighting device for lamps and oil-stoves, the combination of a wick-tube, an insulated metal ring surrounding the said wick-tube, a bimetallic thermal arm of zigzag form mounted by one end on said insulated ring and adapted to be deflected by heat in an approximately vertical direction, an incandescing coil mounted by one end on the free end of the thermal arm, a flexible wire supporting the other end of the incandescing coil and following the deflection of the thermal arm, and means electrically connecting the thermal arm and the supporting-wire respectively, with the opposite poles of a suitable source of electricity.

3. In an electric lighting device for lamps and oil-stoves, the combination of a wick-tube, a cylindrical casing surrounding the same, a ring mounted on the outside of the wick-tube and insulated therefrom, a bimetallic thermal arm fixed by one end to the insulated ring within the annular space between the wick-tube and surrounding casing in position to move in an approximately vertical plane in said annular space, when deflected by heat, an incandescing coil mounted by one end on the free end of said thermal arm, a flexible conducting-wire fixed by one end to the cylindrical casing and connected by its other end to the second end of the incandescing coil and means connecting the fixed ends of the thermal arm and the conducting-wire respectively, to the opposite poles of a suitable source of electricity.

SVEND MARTIN MEYER.

Witnesses:

CHAS. H. WEBB,
OCTAVIUS KNIGHT.