

July 23, 1935.

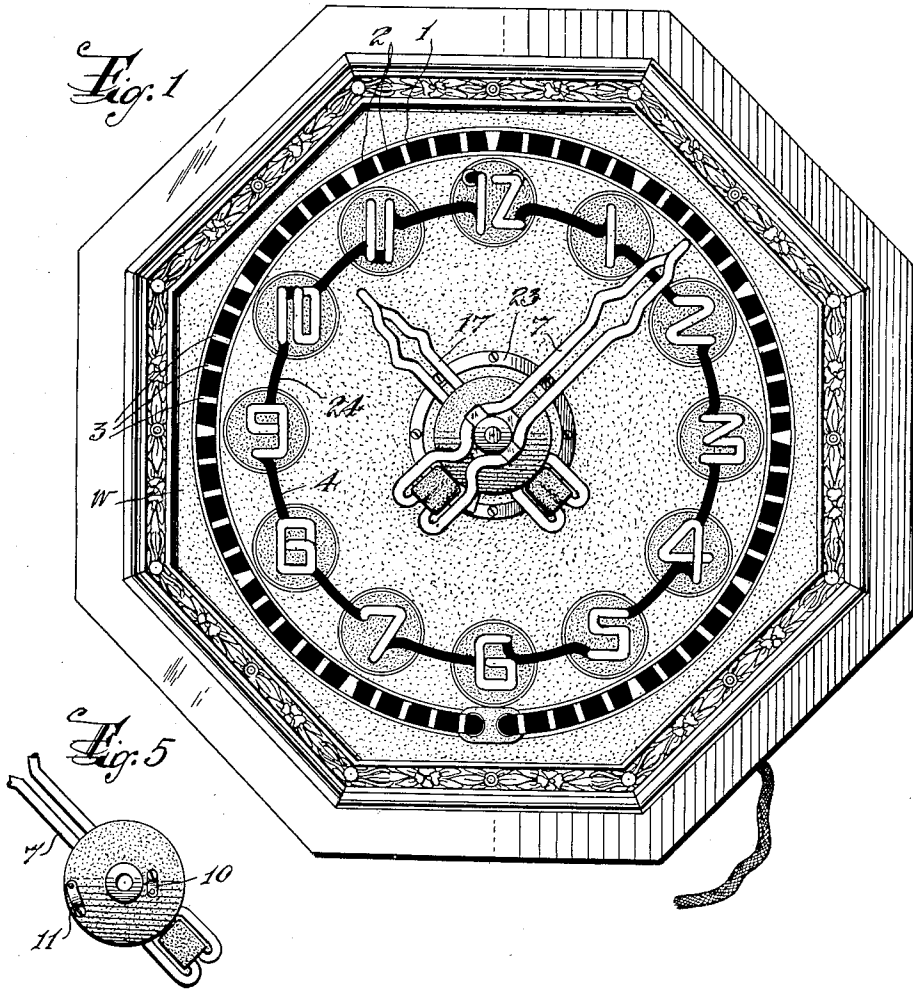
J. SCHMIDT

2,008,930

ILLUMINATED CLOCK

Filed Jan. 27, 1934

4 Sheets-Sheet 1



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July 23, 1935.

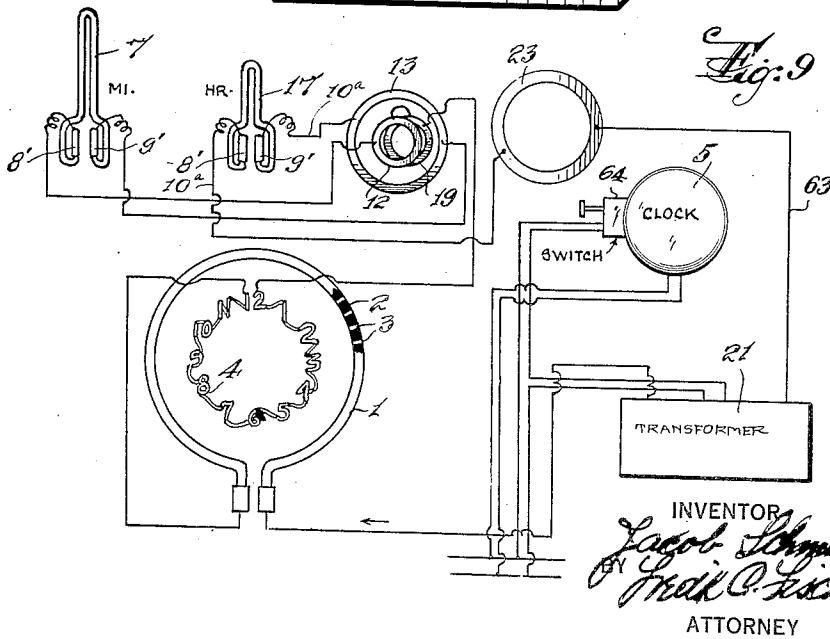
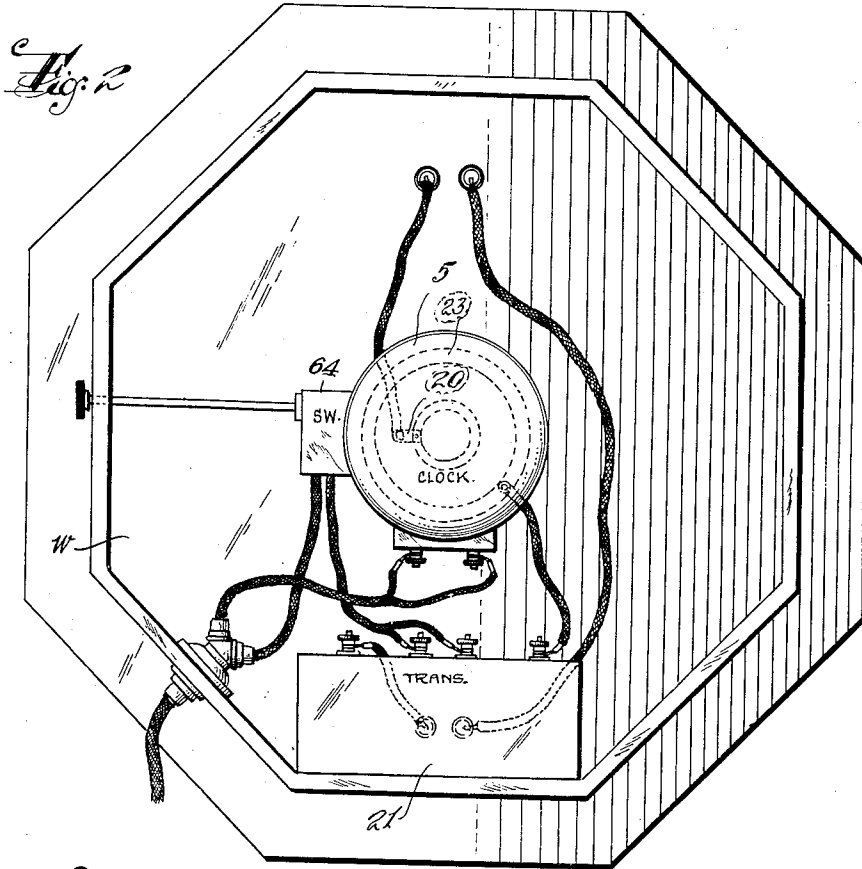
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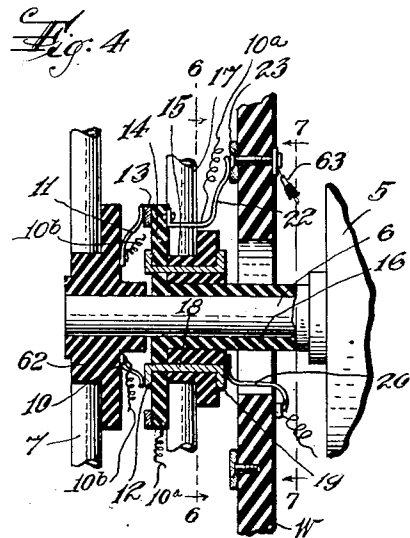
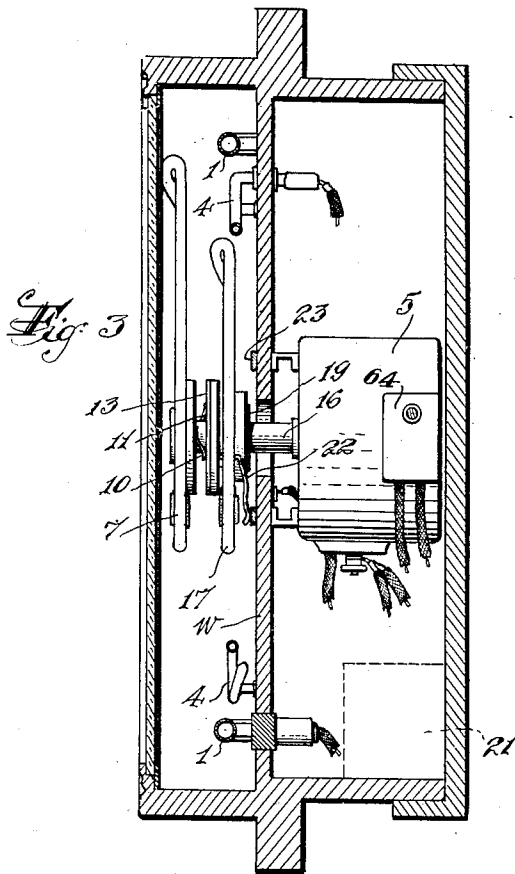
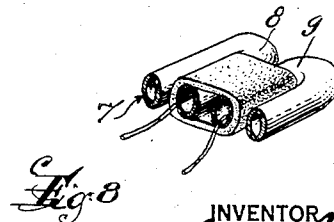
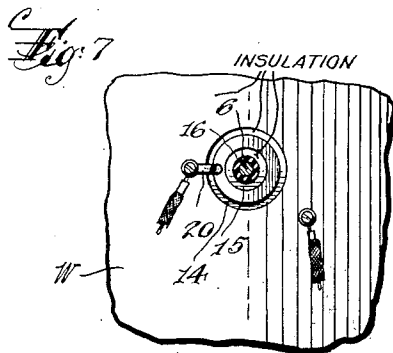
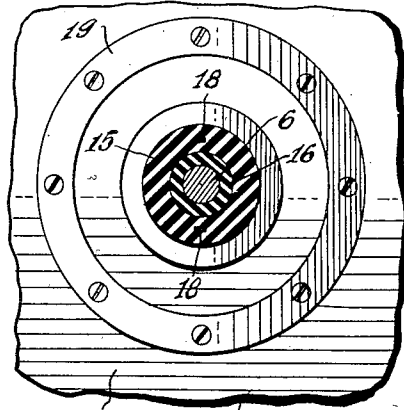


Fig. 6



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Fig. 10

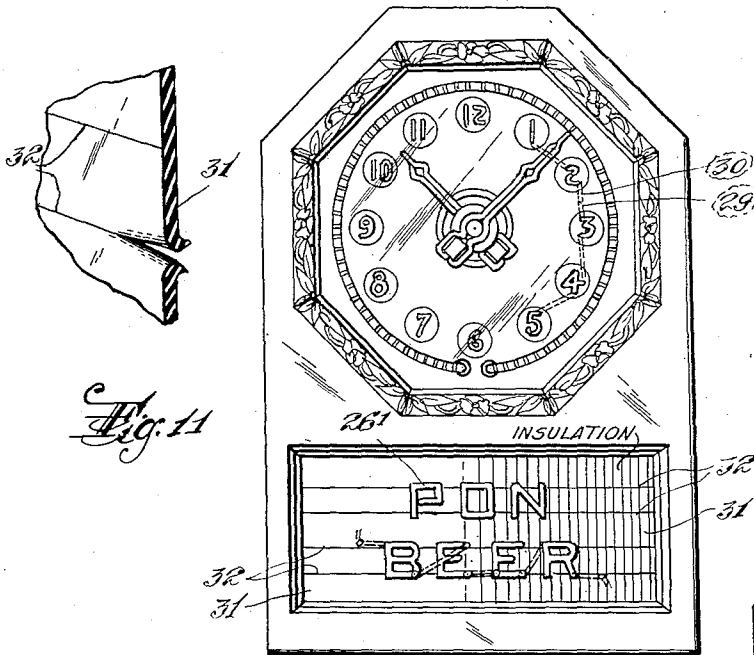


Fig. 11

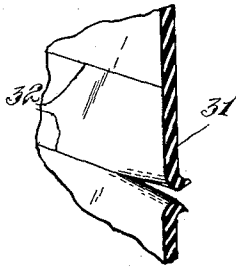


Fig. 12

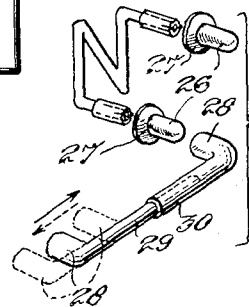


Fig. 13

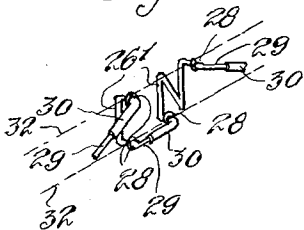
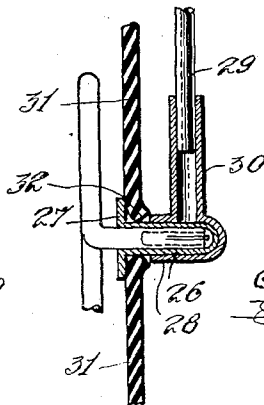


Fig. 14



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UNITED STATES PATENT OFFICE

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ILLUMINATED CLOCK

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3 Claims. (Cl. 58—50)

This invention relates to improvements in illuminated clocks and sign devices and has for an object the provision of means to enable the symbols and hands of the clock to be illuminated by vapor electric illuminating devices.

A further object is the provision of a novel arrangement of electrical contacts and a circuit which enables the dial and rotating hands of the clock to be illuminated by vapor electric devices without annoying sounds and hums such as heretofore have accompanied the operation of vapor electric devices.

A further object is the provision of novel means for detachably connecting in series a plurality of vapor electric devices, which enables the convenient building up of words on an illuminated sign.

A further object is the provision of a novel resilient support for vapor electric illuminating devices in the form of letters and symbols, which support comprises a sheet of suitable material, preferably flexible or resilient, having slits therein through which portions of the vapor electric devices can be passed and held in position.

These and other advantageous objects which will later appear, are accomplished by the simple and practical construction and arrangement of parts hereinafter described and exhibited in the accompanying drawings, forming part hereof, and in which:

Fig. 1 is an elevational view of an illuminated clock embodying my invention,

Fig. 2 is an elevational view of a clock, with the face removed, showing details of electrical connections and other mechanism.

Fig. 3 is a central vertical section of the device shown in Fig. 1 taken with the hour and minute hands indicating twelve o'clock.

Fig. 4 is an enlarged sectional view showing details of electrical contacts for the rotating hands of the clock,

Fig. 5 is a plan view of the underside of the minute hand of the clock,

Fig. 6 is a sectional view taken on line 6—6 of Fig. 4,

Fig. 7 is a sectional view taken on line 7—7 of Fig. 4,

Fig. 8 is a perspective view showing the supports for the electrodes of the vapor electric device used for either the minute or hour hand,

Fig. 9 is a wire diagram of the electrical circuit used in the illuminated clock,

Fig. 10 is an elevational view of a modified form of the invention showing improved means for supporting the symbols,

Fig. 11 is a perspective view partly in section

of the resilient member for supporting symbols,

Figs. 12 and 13 are perspective views showing novel devices for connecting in series adjacent vapor electric devices,

Fig. 14 is a sectional view of the supporting device shown in Fig. 11, illustrating the manner in which a vapor electric device is supported and connected to a similarly supported adjacent device.

Referring to the drawings, an illuminated clock is shown to include a tube 1 of a vapor electric illuminating device, tube 1 being circular in shape and having spaced opaque sections 2 to provide spaced translucent sections 3 to indicate the minutes. Within the border formed by the tube 1 is mounted a tube 4 of a vapor electric illuminating device, which tube 4 is shaped at spaced intervals to provide symbols to indicate hours from 1 to 12.

The clock 5, see Fig. 9, is of the electric type and provided with a shaft 6 upon which is mounted the minute hand 7, which is in the form of a vapor electric illuminating tube bent back upon itself and having adjacent electrodes 8 and 9, which are respectively connected by wires 10b to spring contacts 10 and 11, engaging, respectively, slip rings 12 and 13.

The minute hand 7 and the contacts 10 and 11 are supported by a collar 62 of insulating material fixed to shaft 6.

The ring 13 is mounted upon the flange 14 of the tubular shaft 16 of insulating material, telescoping the shaft 6 as shown in Fig. 4. Fixed to the tubular shaft 16 is a collar 15 of insulating material upon which is mounted the hour hand 17, the latter being in the form of a vapor electric illuminating tube bent back on itself and having adjacent electrodes 8' and 9'.

The slip ring 12 is integral with bars 18 which pass through the collar 15, the bars being attached to another slip ring 19 engaging a spring contact 20, which is connected to an electrode of the tube 4. Mounted on flange 14 and insulated from slip ring 13 is a spring contact 22 which engages a slip ring 23 mounted on the dial panel W of the clock, the slip ring 23 being connected by a wire 63 to a terminal of the transformer 21. The electrodes of the hour hand are connected by wires 10a to the slip ring 13 and to the spring contact 22 as shown in Fig. 4. As stated above, the spring contact 20 is connected to one electrode of the vapor electric device 4 which is in series with the vapor electric device 1 having one terminal connected to the transformer 21. From a study of Fig. 9, it will be seen that the tubes 1

and 4 and the minute hand 7 and the hour hand 17 are connected electrically in series, it having been found that this arrangement eliminates hum and disturbing sounds during the operation of the vapor electrical device.

A switch 64 is connected in series with the primary winding of the transformer, said switch being used to control the vapor electric devices and is mounted on the clock casing for convenience.

In order to increase the visibility of the symbols formed by tube 4, the latter has opaque sections 24 between numerals as shown in Fig. 1.

When the clock above described is connected to a source of electrical power, the symbols and dial, and hands, will be illuminated and the clock 5 will be electrically operated. By providing tubes 1 and 4 with different types of gases or vapors such as neon, argon or helium, various color combinations can be obtained.

In some instances, it is desirable that the symbols be mounted separately and not all confined to the same tube. In such a case each symbol will form a distinct vapor electric device 26', such as shown in Fig. 12, the electrodes of the symbols being in electrical contact with metal nipples 26 having flanges 27. The nipples 26 are adapted to be inserted into sockets 28 of telescoping members 29 and 30. As shown in Fig. 13 a plurality of symbols can be readily connected in series by means of the nipples and the telescoping connectors 29 and 30, the latter enabling the distance between adjacent symbols to be adjusted.

In Fig. 11 is shown a device for conveniently mounting the symbols for the purpose of forming a sign or the like, the mounting device comprising preferably a relatively thick sheet 31 of rubber or similar resilient material having slits 32 through which the electrode of the numeral or symbol can be passed, thus enabling the mounting of letters as shown in Fig. 10. When a plurality of letters have been mounted through the slits 32, they are connected in series and properly spaced by means of the telescoping connections 29 and 30, and the nipples 26, the flanges 27 on the nipples limiting the distance the electrodes can be passed through the slits 32, and also serving to hold the vapor electric devices in a stable condition, as shown in Fig. 14.

It will be noted that the slip ring 13 and the bars 18 carrying the slip ring 12 are embedded in or stably attached to the flange 14 of insulating material, this structure preventing the contacts from being loosened by jarring, and insures a positive tight contact at all times. The contacts attached to the hands are self-contained, enabling the hands to be readily assembled and removed without interfering with the rest of the apparatus. For example, should there be trouble with the minute hand, it could be removed and repaired without in any way interfering with the hour hand and the remainder of the structure. The contacts are not exposed and consequently they are protected from disarrangement by disturbing elements such as jarring or the like.

The clock is independently connected to the main circuit and in the event of trouble with

the neon circuit, there will be no interruption in the proper operation of the clock itself. In other words, the neon and vapor electric light devices may be disconnected for repair purposes or alterations without requiring a disconnection of the clock apparatus from the main circuit. This feature is evidently made possible by the mounting of the vapor electric lighting devices upon the panel or dial of the clock, which obviously is not dependent upon the actual clock mechanism.

By connecting the vapor electric lamps in series, overloading and the possibilities of short circuiting are prevented. This feature is of considerable importance when the devices are used out of doors where winds, rain, and other climatic conditions are likely to create such a situation, which may interfere with the efficient operation of the electrical devices.

From the above description it will be seen that I have provided a novel device for mounting numerals and symbols formed from vapor electric illuminating devices, and also a novel means for readily and conveniently connecting a plurality of such devices in series, or otherwise, as may be desired.

The foregoing disclosure is to be regarded as descriptive and illustrative only, and not as restrictive or limitative of the invention, of which obviously an embodiment may be constructed including many modifications, with out departing from the general scope herein indicated and denoted in the appended claims.

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

1. In an illuminated clock, a vapor electric illuminating tube or lamp of circular shape having a plurality of spaced translucent sections to indicate minutes, a second vapor electric lamp having a plurality of translucent portions formed to the shape of numerals to indicate hours, a third vapor electric lamp rotatable as a minute hand, a fourth vapor electric lamp rotatable as the hour hand, all of said vapor electric lamps being connected in series and a clock mechanism to rotate said third and fourth electric vapor lamps.

2. In an illuminated clock, a vapor electric illuminating tube or lamp rotatable as an hour hand, spaced slip rings mounted on said hour hand, a vapor electric lamp rotatable as the minute hand, spring contact members associated with the electrodes of said minute hand and engaging the slip rings on the hour hand, and means for connecting said hour hand to a source of electrical current, said minute hand and said hour hand being connected in series.

3. In an illuminated clock, a vapor electric lamp having a plurality of translucent portions formed in the shape of symbols to indicate hours from 1 to 12, a second vapor electric lamp rotatable as a minute hand, a third vapor electric lamp rotatable as an hour hand, all of said vapor electric lamps being connected in series, and a clock mechanism to rotate said second and third vapor electric lamps.

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