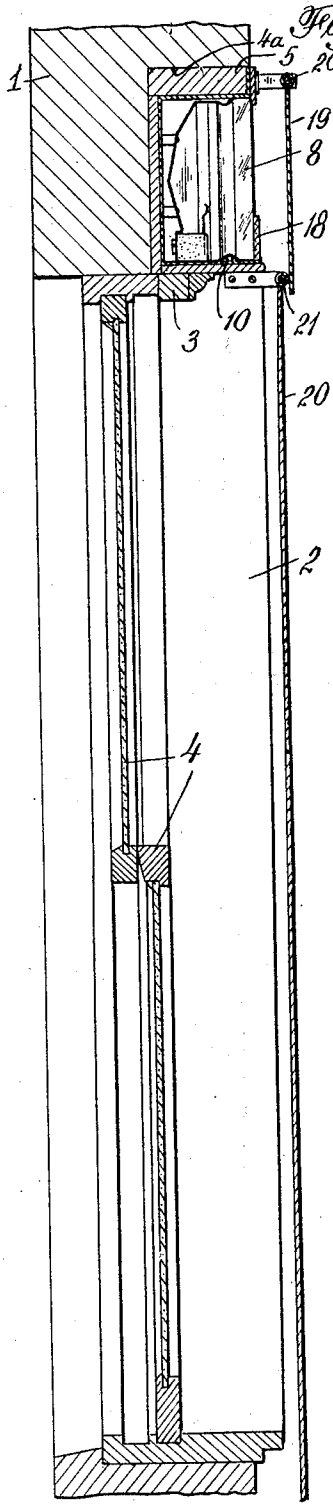
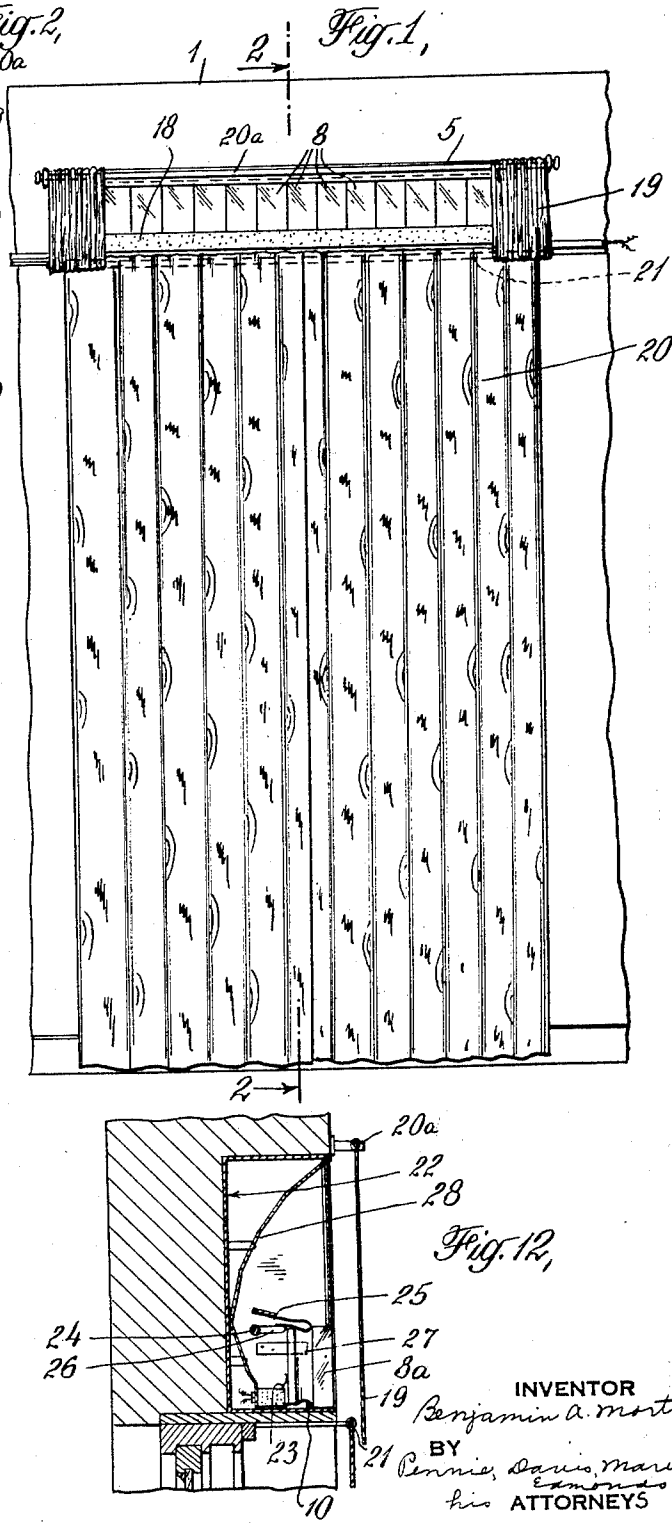
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ILLUMINATING DEVICE

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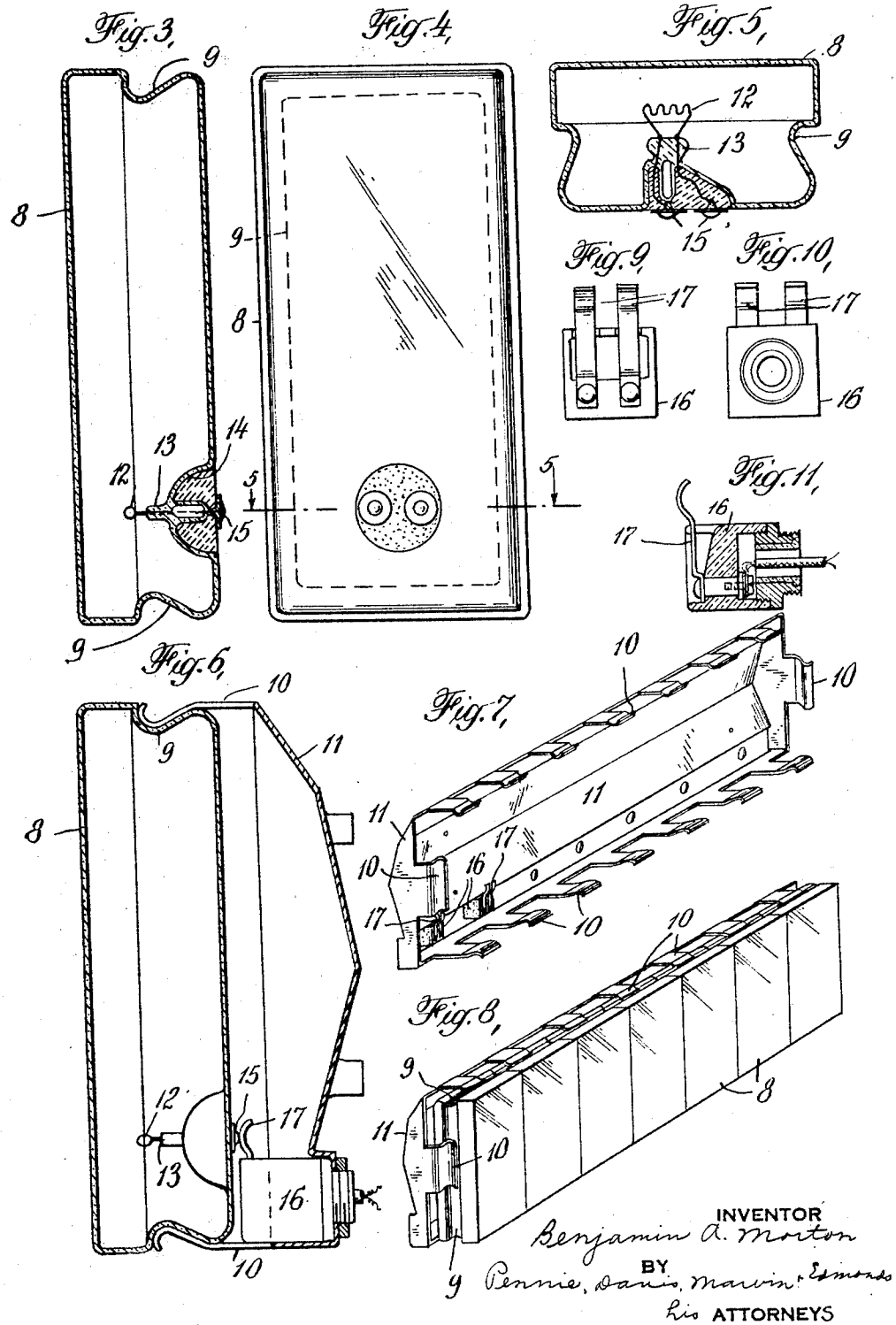


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Fig. 13,



Fig. 14,

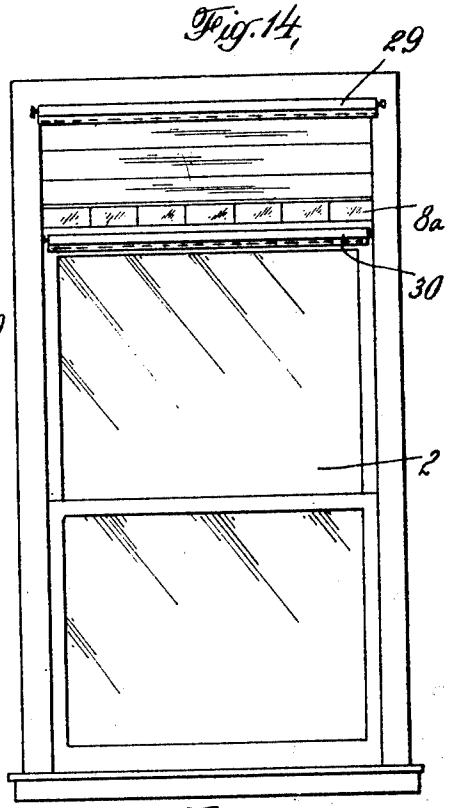


Fig. 16,

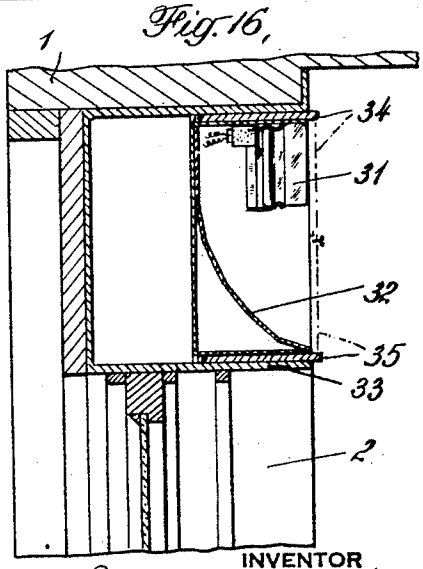
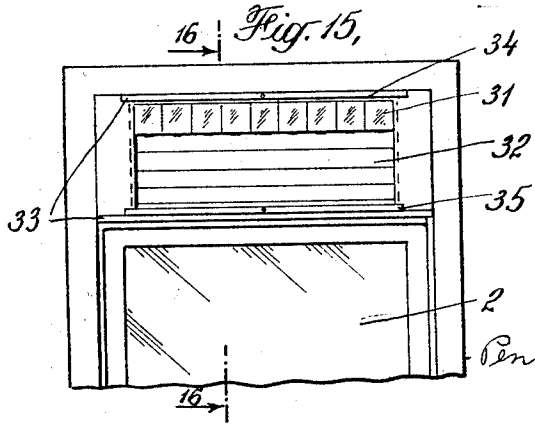


Fig. 15,



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Fig. 17,

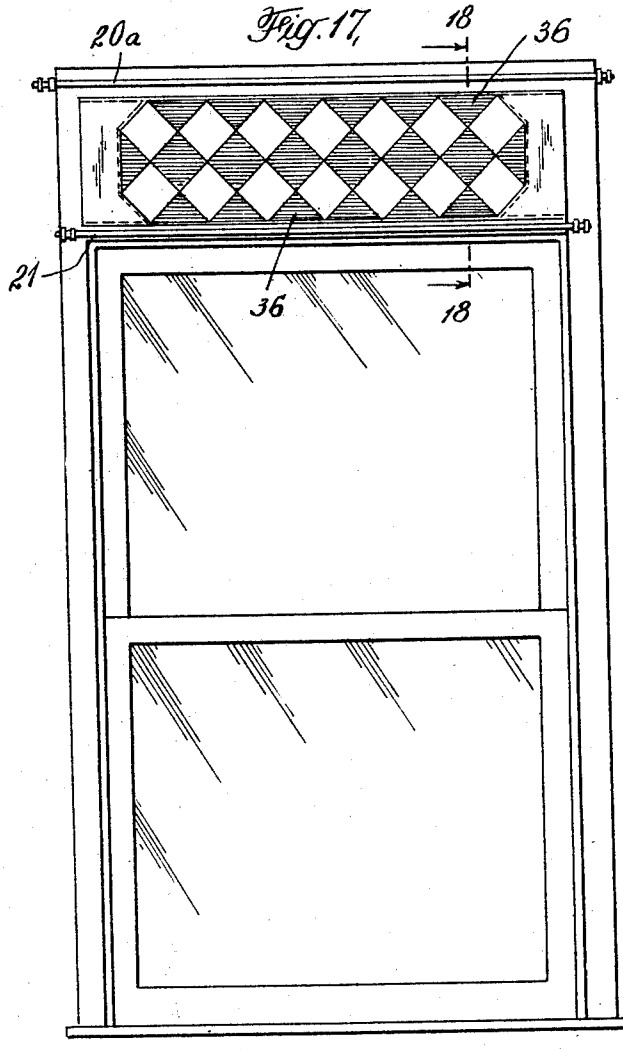


Fig. 18,

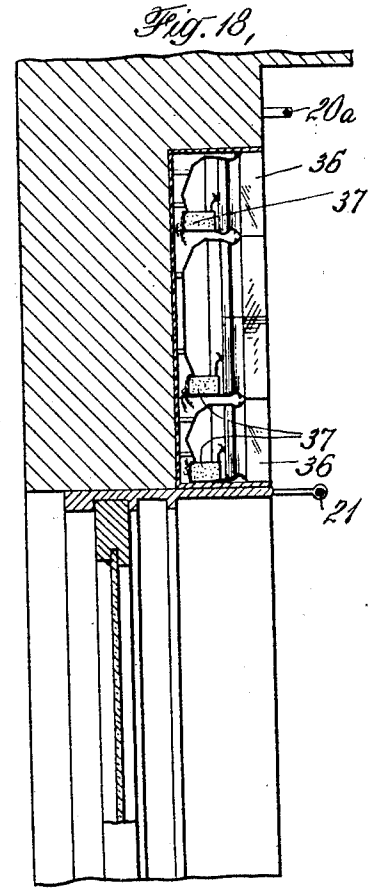
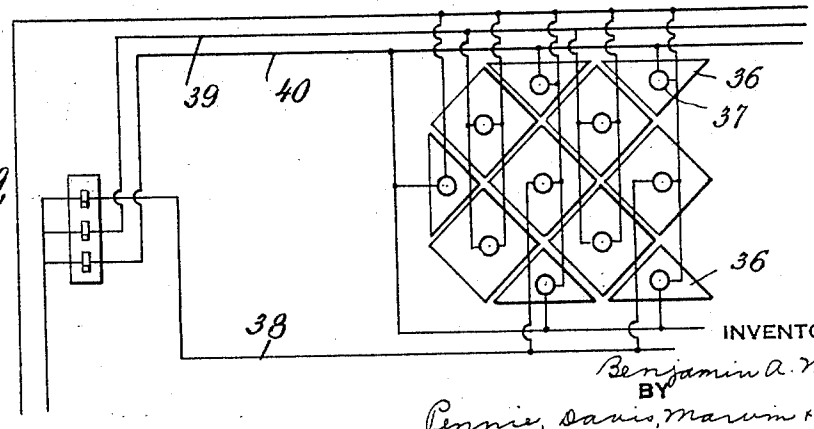


Fig. 19,



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UNITED STATES PATENT OFFICE

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ILLUMINATING DEVICE

Application filed June 22, 1929. Serial No. 372,875.

This invention relates to method and apparatus for effecting artificial illumination, and has for its object the provision of a lighting system wherein the source of artificial light for a room to be illuminated is associated with the windows of the compartment in such manner as to be entirely concealed in the day time when not in use, and when lighted to provide an illumination simulating that of the daylight in that the light comes from the same direction as the daylight and is diffused over a large area as distinguished from the ordinary intense concentrated light.

A further object of the invention is to provide a light of the character described which is built into the wall itself in such manner that it may be completely concealed with window curtains of ordinary design so that in the day time when the light is not in use, the appearance of the window will be in no wise different from an ordinary curtained window.

A further object of the invention is to provide a method of illumination wherein the lighting source is itself like a window in that it is a light-diffusing portion of the wall surface without extending or projecting parts such as are essential to the ordinary lighting fixtures.

In the accompanying drawings I have illustrated several modifications of my invention which will now be described.

Referring to the drawings,

Fig. 1 is an elevational view showing a portion of the wall of a room showing a window equipped with my improved method of lighting;

Fig. 2 is a sectional view on a somewhat enlarged scale on line 2—2 of Fig. 1;

Figs. 3–11 inclusive are detail views illustrating one of the lamps, preferably, but not necessarily, employed in my improved method of illumination, and the holder for the same;

Fig. 12 is a detail view showing a modified form of lamp adapted for use in carrying out my invention;

Figs. 13, 14 and 15 are elevational views similar to Fig. 1, showing different arrangements for utilizing the lighting unit illustrated in Fig. 12;

Fig. 16 is a sectional view on an enlarged scale on line 16—16 of Fig. 15;

Fig. 17 is an elevational view of a further modification of my invention;

Fig. 18 is a detailed sectional view on an enlarged scale on line 18—18 of Fig. 17; and

Fig. 19 is a diagrammatic view showing the circuits for the light arrangement shown in Figs. 18 and 19.

Referring to the drawings, particularly to Figs. 1 and 2, 1 indicates the wall of a building having a window opening 2 containing the usual window frame 3 and window sashes as indicated at 4. Above the window there is provided a recess 4*a* extending across the width of the window and six or eight inches in height. Mounted in the recess is a box-like frame 5 adapted to receive a row of lights indicated at 8, which lights are preferably of the kind described in my companion application of even date herewith. These lights are incandescent electric lights, but instead of being of the usual bulb or pear shape, the lights or "bulbs" are of generally prismatic form so as to present at least one flat surface and straight side edges so that a plurality of the bulbs may be put together to form a continuous surface illuminated by the filaments within.

My preferred form of lights is shown in Figs. 3–11 inclusive. As here shown the glass vessel 8 forming the bulb is of rectangular shape on its front face and of similar shape on the rear face except of slightly smaller dimensions. The bulb is about half as thick as it is wide and around its four side edges it is grooved as shown at 9 to receive the clamping fingers 10 formed on the edges of the reflector 11. The filament 12 is preferably supported in the bulb near the bottom by means of the usual neck 13 through which the lead-in wires pass in the usual manner. Preferably the bulb is provided with a depression 14 in its rear face surrounding the outwardly extending part of the neck so that the terminals 15 of the lamp will project but slightly beyond the rear face of the bulb. Attached to the back of the reflector along its bottom edge, as shown more particularly in Fig. 7, are a series of contact blocks 16

each of which is provided with upstanding spring terminals 17 adapted to engage the contacts on the rear face of the bulbs 8 when the bulbs are in place in the grip of the spring fingers 10 as shown in Figs. 2 and 12.

The glass of the bulbs is preferably frosted on the inside, so as to diffuse the light from the filament which will be further diffused by the reflector at the back, presenting, while the lights are turned on, a light-transmitting surface of substantially uniform intensity throughout.

If desired the bottom edge of the bulb may be concealed by a horizontal strip 18 as shown in Figs. 1 and 2 extending across the face of the row of lights and of a sufficient height to cut off the direct rays of the filament from anyone standing on the floor of the room. With this arrangement lights of high candle power may be used so as to illumine a large room without any part of the light-giving surface being sufficiently brilliant to be unpleasantly intense.

By arranging the lights over the window in the manner described, the illumination of the room in both night time and day time comes from the same general direction so that the furniture in the room when arranged to best advantage for daylight illumination will be suitable for the artificial light. Primarily, however, my improvement provides an arrangement for properly illuminating a room without the employment of any unsightly protruding or depending fixtures such as unavoidable with present-day lighting fixtures. By arranging the lighting in this manner the lights may be entirely concealed when not in use by a valance 19 supported on a rod 20*a* carried by the top member of the frame 5. The window curtains 20 are supported on a rod 21 across the top of the window frame which is concealed by the lower edge of the valance when the valance is closed, so that with the curtains either open or closed the valance presents the usual appearance and the window, when equipped with my improved light arrangement in the day time is indistinguishable from an ordinary window not so equipped. At night time the curtains may be left closed and the valance opened. To that end the valance is made in two pieces and provided with the usual operating cords similar to those employed for the curtains.

In Fig. 12 I have illustrated a somewhat different form of bulb which may be used if desired. As here shown the bulbs 8*a* are square on their front faces and of a height to only partially fill the frame 22. The bulbs are arranged in a row across the bottom wall of the frame and are held in place against the contacts 23 by a bar or rod 24 which overlies the row of bulbs and is held down in place on the bulb by means of springs 25 fastened to the end wall of the frame and overlying the ends of the rod above the arms 26 on which the rod is mounted. Also attached to each end wall of the frame is a spring finger 27 adapted to engage the outside walls of the two end bulbs in the row and hold the bulbs together and thus present a substantially illuminated face. The back of the frame 22 may be formed of a reflector 28 to diffuse the light passing through the back and upper walls of the bulbs.

In Fig. 14 I have shown an arrangement particularly adapted for offices and the like, where curtains such as shown in Figs. 1 and 13 would be out of place. In this figure I have illustrated a lighting arrangement such as shown in Fig. 12, but instead of employing curtains with a valance to conceal the window and lights, ordinary shade rollers, as indicated at 29, may be employed, the lower roller covering the window in the usual manner and the upper shade, preferably of somewhat greater width, covering the lights and the reflector frame. In the day time when the upper shade 29 is pulled down sufficiently to cover the lower shade 30, the window will present the appearance of an ordinary window with a partly drawn shade.

In Figs. 15 and 16 I have illustrated another arrangement of lights. As here shown the row of lights 31 is supported at the top of the reflector frame with the reflector 32 curved upwardly at the bottom so as to reflect the light from the back and bottom walls of the bulb out into the room and against the ceiling, where it will be properly diffused. In these figures I have also illustrated another method of concealing the lights when not in use. As here shown the frame 33 in which the lights and reflector are supported, is provided at the top and bottom with sliding and pivoted covers 34, 35, which may be drawn out and closed against the face of the frame as shown in dotted lines in Fig. 15, giving the window the appearance of having a panel across the top.

In Figs. 17 and 18 I have illustrated a further arrangement wherein different degrees of illumination may be had without detracting from its appearance. To this end the entire front face of the frame is filled with bulbs which are preferably square and set diagonally with respect to the walls of the frame so as to form a pattern, as illustrated in Fig. 17. Triangular bulbs 36 may be employed around the margin to fill in between the corners. Any suitable means may be provided for holding the bulbs in place. For example, individual sockets 37 formed of spring clips for engaging the grooved edges of the bulbs may be provided, individual contacts being positioned to engage the terminals of the filament, as shown in Fig. 18.

For the design shown in Fig. 17 the sockets 37 will be arranged in alternate rows of three and two, respectively, the first row to hold

one square and two triangular bulbs and the next two rows square bulbs, and so on.

The various terminals are connected together in different groups having different numbers of lights so that by turning different switches the illuminated area will be varied but the lights which are lighted in any case will be in regular pattern and not haphazard in the frame, which would give the appearance of burned out lights. For example, the middle row of square bulbs may be all connected as indicated by the circuit 38 so as to afford a minimum degree of illumination by turning on this row of bulbs only. The upper and lower rows of square bulbs may be similarly connected in a single circuit as indicated at 39, so that when this circuit line is closed there will be two rows of bulbs, providing double the light obtained when the first circuit only is closed. By closing both circuits all the square bulbs may be illuminated, and lastly all the triangular bulbs may be connected in a third circuit indicated at 40, and when this circuit also is closed the entire face of the frame will be illuminated.

I have illustrated my improved lighting arrangement as contained in a recess above the window frames, and this, I believe, is the preferred location. However, it may be otherwise associated with the window without departing from the spirit of my invention. For example, the frame containing the lights may be readily located within the window frame in front of the top portion of the upper sash. By having a valance of sufficient depth hung in the usual manner along a pole parallel with the curtain pole, the lights will be concealed when the curtains are opened and will only be visible when the valance which will preferably be made in two parts, as described, is opened. The frames containing the lights may also be mounted along the side edges of the window frame, so as to be concealed by the side edges of the curtains when the curtains are either opened or closed, in the usual manner, the lights being readily visible by pushing in the outer edge of the curtain sufficiently to be able to light them.

Other arrangements of the lights will doubtless suggest themselves, and it is to be understood that my invention is limited only to the extent indicated by the appended claims.

I claim:

1. The combination with a window of a group of lights forming an illuminated area adjacent to the window and covers for concealing said lights in such manner that when closed the window will present the appearance of an ordinary window.

2. The combination of a window of a series of lights forming an illuminated area adjacent thereto, and curtains for the illuminated area and the window so arranged as to cover the illuminated area when the window is either covered or uncovered.

3. A window, artificial lights above said window, curtains over said window, a valance over said lights, and means for shifting said valance to uncover said lights independently of the curtains.

4. In combination with a window, a frame mounted in the wall adjacent thereto, a series of lights supported in the frame and forming a continuously illuminated surface substantially in the plane of the wall surface, and means independent of the window curtains for optionally covering said lights, said means comprising a valance having its lower edge extending over the upper edge of the window curtain so that the window when the valance is in place presents the appearance of an ordinary curtained window.

5. The combination of a wall, a window therein, a recess in the wall above the window, a frame in said recess, electric lights supported in said frame and within said recess, electric circuit connections for said lights supported in said frame, a curtain for said window and a curtain adapted to cover said lights and the upper part of said window curtain.

6. The combination of a wall, a window therein, a recess in the wall above the window, a frame in said recess, electric lights having flat front faces supported in said frame and within said recess with their front faces substantially flush with said wall, electric circuit connections for said lights supported in said frame, a curtain for said window and a curtain adapted to cover said lights and the upper part of said window curtain.

7. A window having means for illuminating a room both in the daytime and at night, comprising a window-frame supporting window-sections, the wall above the frame having a recess therein, an open-faced box supported by said window frame in said recess, the face of the box being closed flush with the wall surface by members constituting the portion of the wall surface occupied by the box, a continuous broad band of illumination emanating from the same direction as daylight.

8. The combination of a wall, a window therein, a recess in the wall adjacent said window, and series of electric light bulbs having flat front faces supported in said recess with their flat faces substantially filling said recess and forming a surface flush with said wall the lights of each series being grouped separately to form the face of the recess into a plurality of different patterns, and a separate circuit for each of said patterns, whereby different positions of said surface may be illuminated to present different lighting patterns.

9. The combination of a wall, a window therein, a recess in the wall adjacent said

window, a series of electric light bulbs having flat front faces supported in said recess with their flat faces substantially filling said recess and forming an illuminated surface flush with said wall, and separate curtains for covering said window and said lights.

10. The combination of a wall, a window therein, a frame mounted adjacent said window, a series of spring contacts mounted in said frame, a series of bulbs in said frame, said bulbs having flat front faces, and means for holding said bulbs in said frame with their terminals in engagement with said contacts and with their front faces in substantial alignment.

11. An apparatus for direct and indirect lighting comprising a wall having a recess above the eye level of persons standing on the floor, direct lighting units occupying a portion of the face of said recess, and a reflector formed at the back of said recess adapted to reflect the light from said lighting units through the unoccupied space at the front of said recess onto the ceiling to provide indirect illumination for the room.

12. An apparatus for indirect lighting comprising a wall having a recess above the eye level of persons standing on the floor, direct lighting units occupying a portion of the face of said recess, and a reflector formed at the back of said recess adapted to reflect the lights from said lighting units through the unoccupied space at the front of said recess into said room, said lighting units comprising elements having flat faces of light-diffusing material arranged in juxtaposition to each other so as to form an illuminated area.

In testimony whereof I affix my signature.

BENJAMIN A. MORTON.