May 6, 1930. J. W. KAUFFMANN 1,757,718

ILLUMINATOR, DE-FROSTER, DE-HEATER, AND DISPLAY DEVICE FOR WINDOWS, SHOW CASES, AND OTHER PLACES

Filed Aug. 7, 1929

Fig. 1.

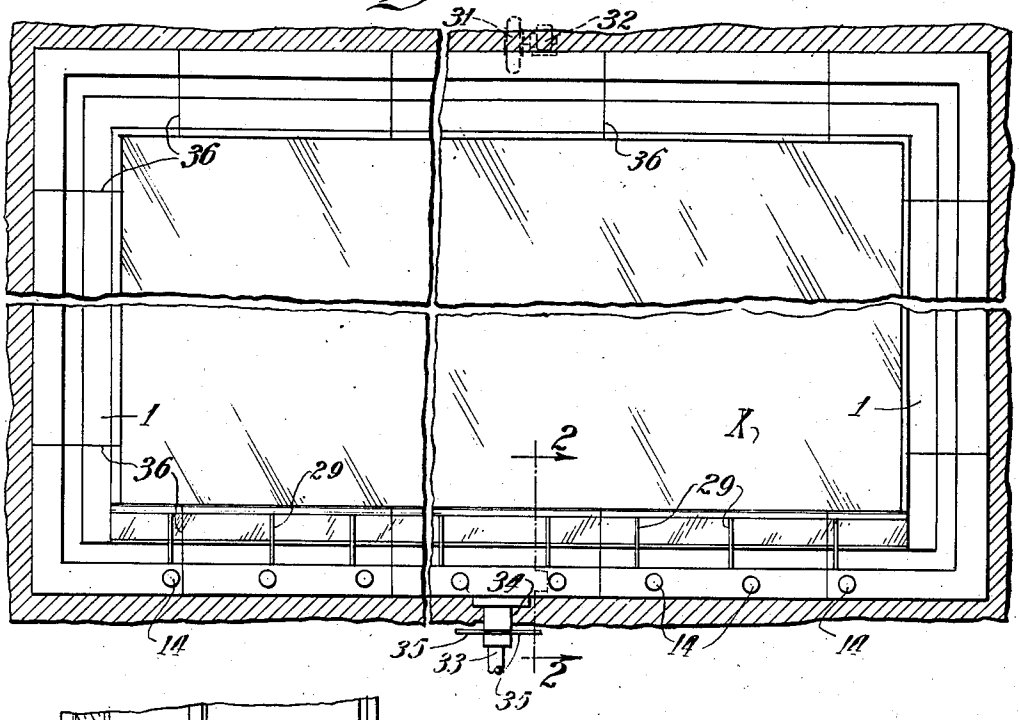


Fig. 2.

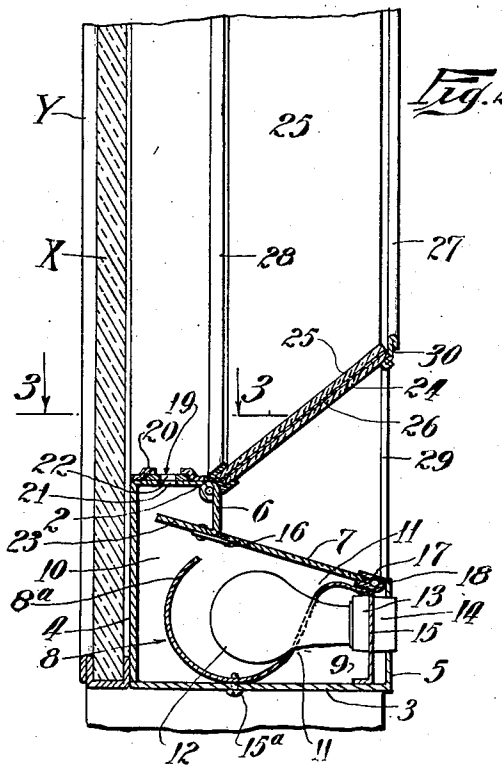
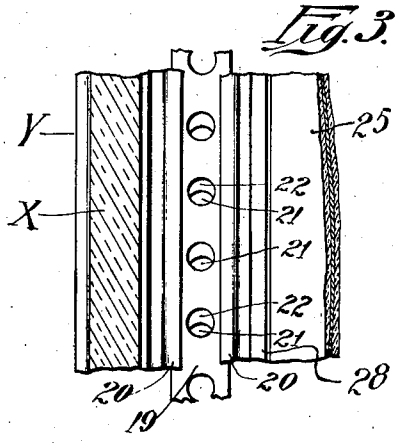


Fig. 3.



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Patented May 6, 1930 1,757,718

UNITED STATES PATENT OFFICE

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ILLUMINATOR, DEFROSTER, DEHEATER, AND DISPLAY DEVICE FOR WINDOWS, SHOW CASES, AND OTHER PLACES

Application filed August 7, 1929. Serial No. 384,217.

This invention relates to means whereby objects on display are illumined, means whereby during certain seasons of the year the formation of frost on the glass of a window is prevented; and whereby, at other seasons of the year the deposit of steam or vapor on said glass is prevented; and means whereby a display is made of advertisements or other readable or pictured matter.

Among the objects of this invention is to obtain means whereby the source of illumination of a shop window, or show case, and of the objects therein, will not be disclosed to view through the glass thereof; an additional object is to obtain a construction which may be readily installed in place in different sizes of windows and show cases, and which will effectually prevent the formation of frost on the glass of the window or show case during the winter season. An additional object is to obtain a device by means of which the glass of a window or show case will be protected against the deposit of steam or vapor thereon during the summer season. An additional object is to obtain a construction of the kind named, by means of which advertisements or other readable or pictured matter may be exposed to view through the glass of a window, show case or other place, without material obstruction to the view through said glass of articles on display which are illumined by the device.

I have illustrated a construction embodying this invention in the drawing referred to, in which Fig. 1 is a front elevation of said construction. Fig. 2 is a cross section on an enlarged scale, of a horizontal member forming an element of the construction illustrated in Fig. 1, taken on line 2—2 of said figure, viewed in the direction indicated by arrows; and a cross section of a portion of the glass of a window or show case, showing said horizontal member in proper relative position to said glass. And Fig. 3 is a horizontal section of the construction embodying the invention, on an enlarged scale, taken on line 3—3 of Fig. 2, viewed in the direction indicated by arrows, showing also the parts of said construction which are illustrated in proper position relative to the glass of a window or show case.

A reference character applied to designate a given part indicates said part throughout the several figures of the drawing wherever the same appears.

X represents the glass of a window or show case, and Y represents the frame or sash of said glass. 1 represents a hollow frame which is illustrated in Fig. 1 as extending entirely around and adjacent to the edges of glass X. Frame 1 is made in sections to permit the desired number and length of sections to be installed, to properly surround said glass. The sections are closely joined so that no considerable quantity of air escapes through said joinings. Frame 1 comprises the horizontal members 2, 3 and the vertical members 4, 5 and 6, all of which are preferably made of sheet metal. Said frame also comprises the member 7, which is preferably made of glass, to permit the passage therethrough of light rays. 8, Fig. 2, represents a partition which extends longitudinally the length of hollow frame 1, within said frame. Partition 8 is preferably covered with a surface adapted to reflect light rays, as say, white enamel. Said partition divides the chamber of said hollow frame into two longitudinally extending chambers, designated 9 and 10, respectively. Chamber 9 is, by me, termed an air conveying chamber, or an air conduit; and the chamber 10 is termed an illuminating or light giving and heat producing chamber or conduit. Partition 8 is provided with apertures 11, through which the neck of bulbs 12 extend and in which said necks fit loosely. 13, 14, represent two-part sockets of bulbs 12. Sockets 13, 14, are in ordinary use, and comprise part 13, into which the neck of bulb 12 is inserted, and

part 14 into which part 13 is inserted, usually by screw threads. 15 represents a partition which is illustrated as interposed between parts 13 and 14, (see Fig. 2), to hold said parts in position. 15ª represents a screw which is illustrated as extending through horizontal member 3 of the hollow frame 1, and into partition 8, to hold said partition in place, (see Fig. 2). 16 represents a ledge on which one edge or side of glass 7 rests. 17 represents a frame in which the other edge or side of glass 7 is held. 18 represents a rod or pintle on which frame 17 may be turned, 19 represents a slide which is longitudinally movable in guides 20, on the upper face of horizontal member 2 of hollow frame 1. 21 represents apertures in horizontal member 2, and 22 represents apertures in slide 19. By changing the longitudinal position of slide 19 the aperture 21 may be wholly or partially opened, or entirely closed. A portion of said slide is well illustrated in Fig. 3, in position partially closing apertures 21. 23 represents a baffle plate in hollow frame 1, which is there placed to prevent light rays extending through apertures 21 and 22. The end edge or side 8ª of partition 8 also acts as a baffle to light rays, to prevent said rays flowing through apertures 21. 24, 25, respectively represent plates of transparent, (or translucent) material, and 26 represents translucent material interposed between plates 24 and 25. Plate 26 may consist of a coat of paint, or printing, in a translucent color or pigment. Advertising or other matter in words, figures or pictures desired to be displayed by this device are placed or mounted to form plate 26 and are illumined from the rear thereof to be viewed from the front, through the glass X. 27, 28, represent the frame of plates 24, 25 and 26, and 29 represents supporting rods which extend from member 5 of frame 1 to member 30 of frame 27.

31, Fig. 1 represents an air blower and 32 an electric motor adapted to drive blower 31. Blower 31 is arranged so that the discharge pipe or conduit thereof communicates with air conveying chamber or conduit 9. 33 represents an air discharge or exhaust pipe, which is illustrated as secured to the lower horizontal member of hollow frame 1, by connection 34. The receiving end of exhaust pipe 33 is in communication with chamber 10. 35 represents a slide by means of which the flow of air through exhaust pipe 33 may be wholly or partially obstructed.

36 represents the meeting ends of the several sections by which frame 1 is built up. This frame preferably extends entirely around the glass X, to illume the shop window or show case; but the apertures 21 and slide 19 with apertures 22 therein are only required in the lower horizontal member of the construction.

In operating this device, during the seasons of the year in which frost, steam or vapor is liable to form or to appear on glass X, slide 19 is moved to wholly or partially open, (or not obstruct) apertures 21 and slide 35 is moved to wholly or partially obstruct passage or exhaust pipe 33, as required.

To operate the device motor 32 is energized and blower 31 thereby actuated to force air into chamber or air conduit 9, and said air flows from said chamber 9 into chamber 10, around the bulbs of the electric lights 12, through apertures 11; the peripheries of said apertures being in spaced relation to the periphery of said bulbs to permit said flow. As the apertures 21 are only made in the lower horizontal member of the frame, air in the chamber 10 moves in said chamber to said horizontal member, becoming heated in said movement by contact with the bulbs of the electric lights, and is dischargeable through apertures 21 or exhaust pipe 33, as controlled by the slides 19 and 33. When said heated air is discharged through apertures 21 it prevents frost, steam or vapor forming on glass X; and if there be any frost, steam or vapor on glass X when the device is put into operation, said heated air will remove the same. This heats the show window to some extent; but prevents any considerable heating of glass X adjacent to its edges by said bulbs.

When apertures 21 are obstructed by slide 19 and slide 35 is moved so that the exhaust pipe 33 is not obstructed, the heated air in the hollow frame is discharged through said exhaust pipe, and no considerable heat passes through the walls of the device into the shop window or show case; but light passes through the plate 7, to illume the shop window or show case and the objects displayed therein, as well also, to illume the marks or characters on forming plate 26.

The primary purpose of partition 8 is to maintain air which is forced into the hollow frame in as cool a condition as possible before it is discharged through apertures 11 on to and around electric light bulbs 12, by means of which the air is heated. When the hollow frame does not extend entirely around glass X the functions named are not so great as when the frame is constructed to so extend; and under such circumstances said partition 8, while advantageous is not essential.

I claim:

1. A hollow frame, a longitudinally extending partition in said frame arranged to obtain an air conduit and an additional conduit extending the length of said frame, said partition provided with apertures, electric light sockets secured in one of the walls of said air conduit, electric light bulbs extending through said apertures and mounted in said sockets, said bulbs fitting loosely in said apertures to permit the flow of air from said air conduit into said additional conduit, in

combination with means whereby air is discharged from said additional conduit.

2. A hollow frame built up of sections joined at their meeting ends, a longitudinally extending partition in each of said sections, arranged to obtain an air conduit and an additional conduit extending the length of said frame, said partitions respectively provided with apertures, electric light sockets mounted in said air conduit, electric light bulbs extending through said apertures and mounted in said sockets, said bulbs fitting loosely in said apertures to permit the flow of air from said air conduit into said additional conduit, in combination with means whereby air is discharged from said additional conduit.

3. A hollow frame, a longitudinally extending partition in said frame arranged to obtain an air conduit and an additional conduit, both said conduits extending the length of said frame, said partition provided with apertures, electric light sockets mounted in said air conduit, electric light bulbs extending through said apertures and mounted in said sockets, said bulbs fitting loosely in said apertures to permit the flow of air from said air conduit into said additional conduit, in combination with means to direct the flow of air discharged from said additional conduit.

4. In an illuminator, de-froster, de-heater and display device, a hollow member, a longitudinally extending partition in said member arranged to obtain an air space and an additional space in said member, said partition arranged to form a reflector, and provided with apertures therethrough, electric light sockets mounted in said air space, and electric light bulbs extending through said apertures and mounted in said sockets, said bulbs fitting loosely in said apertures to permit the flow of air from said air space into said additional space, all combined as set forth.

5. In an illuminator, de-froster, de-heater and display device, a plurality of hollow members adapted to be joined and form a hollow frame, longitudinally extending partitions in said members adapted to form continuously extending conduits in said frame, said partition provided with apertures therethrough, electric light sockets mounted in said frame, and electric light bulbs extending through said apertures, and mounted in said sockets, said bulbs fitting loosely in said apertures to permit the flow of air therethrough around said bulbs, all combined as set forth.

6. In an illuminator, de-froster, de-heater and display device, a hollow member, a longitudinally extending partition in said member, said partition provided with apertures, and electric light sockets mounted in said member, in combination with electric light bulbs extending through said apertures and mounted in said sockets, and means to mount display matter in position to be illumined from the rear by light from said bulbs.

7. A hollow member adapted to form a section in a conduit, said member comprising longitudinally extending walls, one of said walls of transparent material, an additional one of said walls provided with apertures therethrough, means to control the area of said apertures, in combination with a longitudinally extending partition in said member, said partition provided with apertures therethrough adapted to permit electric light bulbs to extend therethrough with the periphery of said bulbs in spaced relation to the periphery of said apertures.

8. A member comprsing longitudinally extending walls one whereof is of material through which light passes and an additional one provided with a plurality of apertures, means to obstruct the passing of light through said apertures, and means to control the area of said apertures, in combination with means extending longitudinally in said member to obtain a plurality of spaces, said means arranged to form a reflector in one of said spaces, and said means provided with apertures therethrough, said apertures adapted to permit electric light bulbs to be extended therethrough with the periphery of said bulbs in spaced relation to the periphery of said apertures.

9. A member comprising longitudinally extending walls one whereof is of material through which light passes and an additional one provided with a plurality of apertures, means to obstruct the passing of light through said apertures, means to control the area of said apertures, an additional aperture through one of the walls of said member and means to obstruct determined ones of said apertures, in combination with means extending longitudinally in said member to obtain a plurality of spaces therein and said means provided with apertures therethrough, said apertures adapted to permit electric light bulbs to be extended therethrough with the periphery of said bulbs in spaced relation to the periphery of said apertures.

10. A hollow member adapted to form a section of a construction comprising a plurality of said sections joined at their meeting ends, said sections respectively provided with a wall which permits light to pass therethrough, and means to generate light in said sections, in combination with means to discharge air in a controlled direction from said sections, and means to direct the flow of air in said sections relative to said means to generate light.

11. A hollow member provided with a wall which permits light to pass therethrough, means to generate light in said member, means to discharge air from said member, in

combination with means to control and direct the flow of air from said member.

12. A hollow member, means to display characters arranged relative to said hollow member to receive light on the under side thereof, means in said member to generate light and means to direct light from said member to the under side of said means to display, said member provided with a wall of material permitting light to pass therethrough, in combination with means to control the flow of air through said member, and means permitting the discharge of air from said member.

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