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APPARATUS FOR PREVENTING CONDENSATION ON THE INSIDE SURFACE OF A SHOW CASE WINDOW

Filed Dec. 16, 1930

FIG: 1.

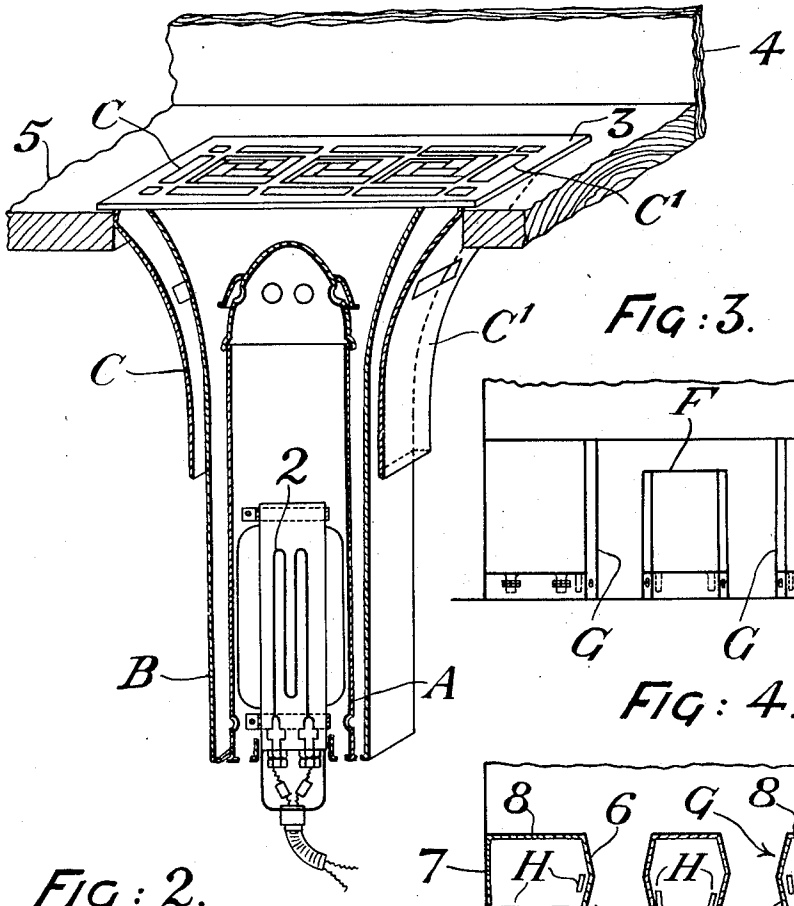


FIG: 2.

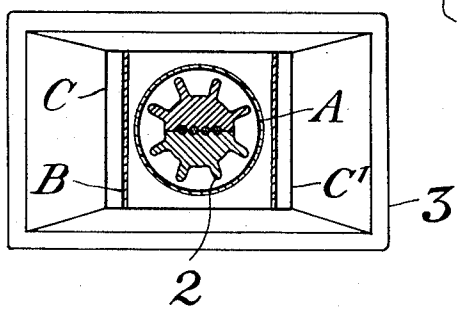
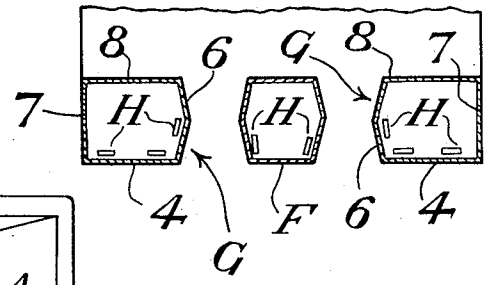


FIG: 3.

FIG: 4.



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APPARATUS FOR PREVENTING CONDENSATION ON THE INSIDE SURFACE OF A SHOW CASE WINDOW

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7 Claims. (Cl. 20—40.5)

This invention refers to show cases for the display of goods, particularly show cases for shops, and comprising a window or windows which or any of which may be an outside window, for instance, a front window of a shop, or the show case may form part of an entrance passage to a shop. Show cases to which this invention refers are of the kind which normally form a closed area, isolated from the general interior of the shop, and in which windows of the ordinary kind are used, thus, vision into the shoe case is through a single sheet of glass, not through sheets of glass with space intervening between the surfaces of the sheets. The invention relates to the provision of improved apparatus for preventing the inside surface of a window of such show cases from becoming obscured by condensation of aqueous vapour from the air.

In regard to this invention it may be useful to explain that aqueous vapour is always present in the atmosphere, the quantity varying with the temperature, but a certain maximum cannot be exceeded at any given temperature. When this maximum is present the atmosphere is saturated. As the maximum increases with the temperature, saturated air, if cooled, will not be able to contain its full quota of aqueous vapour. Some of this vapour, hitherto invisible, will then be condensed and may become visible as mist and be deposited on cold surfaces in the form of dew. Thus, if condensation takes place on the inside surface of a window of a show case and the fall in temperature be sufficiently extended, the condensation may result in total obscurity of vision, and if the temperature is further reduced, the condensed vapour may become frozen.

According to this invention provision is made for inlet of dried air to the show case and for outlet to the atmosphere of air therefrom while the show case otherwise forms a closed area, the air being induced from the atmosphere and heated and dried by electric heating means. In one arrangement the drying is effected in the region close to the show case, for example, beneath and close to the floor of the case, and inlet of dried air is made at the floor lever of the show case. Outlet of air from the show case may be at the floor level or in the region of the roof of the case or from both. For example, at the floor level outlet of air, relatively to inlet, may be laterally at the sides, say, with inlet at a central position of the floor, outlet may be at the sides thereof close to or at any distance therefrom within the area of the floor, thus it might be near the sides or ends, say opposite sides, or ends, or at both sides and ends.

Apparatus for use with a show case in accordance with this invention comprises means for inlet from and outlet to the atmosphere of air associated in a single structure applicable for installation with electric heating means as a complete unit.

One form of apparatus according to this invention in which provision is made for inlet of dried air at the base of the show case and outlet also at the base, comprises a head portion of grid character, formed with an inlet or inlets and outlet or outlets, and having a flat surface which may be arranged in the plane of the floor of the show case. For example, inlet may be at a middle area and outlet at side or (and) end areas. Apparatus of this kind may comprise an uptake or uptakes, in one of which electric heat elements are housed, and downtakes at two opposite sides of the uptake or uptakes. Admission of air to the uptake or uptakes may be at a level appreciably below the head and the exit from the downtakes may be at a level below the head but appreciably higher than that of admission, or at the same level as that of admission but preferably arranged so that issuing air is not directly drawn again into the uptake or uptakes, the exit being, for example, spaced apart from the entrance to the uptake or uptakes. The electric heating means may comprise an electric resistance element enclosed in, and insulated from, a body of material of good heat conducting properties from whose outer surface heat is radiated.

An example of apparatus and its application is illustrated in the accompanying drawing, in which:—

Figure 1 is a vertical sectional perspective view.

Figure 2 is an inverted sectional plan.

Figure 3 is an elevation, and Figure 4 is a sectional plan showing in diagram an application of the invention.

The apparatus, see Figures 1 and 2, comprises an inner tubular member A, which in cross section is circular, an electric heat element 2 within A, and an outer tubular member B which in cross section is rectangular. The members A and B form an uptake at the top of which is a grid 3, from which at the ends downtakes C C^1 extend. This apparatus is shown applied to a shop show case of which 4 is an outside window, and 5 is the floor of the case. The electric heat element 2 in this example comprises a body having heat radiating fins projecting from its surface and made up of two halves held together with a

sinuous resistance element clamped between, and insulated, for example by mica, from them. The body is preferably composed of material having good heat conducting properties.

With this apparatus air passes up the uptake partly in A and partly in B, through the grid into the show case and passes downwardly from the show case through the grid into the downtakes C C^1.

Figures 3 and 4 illustrate the front portion of a shop having front outside windows 4, 4 and between them an entrance passage in which there is a show case F, and at each side of the passage there is a show case G. The walls of the show case F may all be of glass. Each show case G comprises a front wall 4, which is a front outside window of the shop, passage walls 6, which are passage windows of the shop, and end wall 7 which may be part of the side wall of the shop, and a back wall 8 which may be doors, say of glass or of wood, to give access to the show case for arranging the display of goods. Each of the cases F and G normally forms a closed area, and in the floor of each case apparatus H, according to this invention, is fitted, and below the floor there is a space in free communication with the atmosphere.

I claim:

1. For use in preventing a window of a show case from becoming obscured by condensation upon the inside surface of the window of aqueous vapour, apparatus formed as a single structure applicable to the show case as a complete unit and comprising electric heating means for heating and drying air, means, communicating with the atmosphere, for the inlet into the show case of air induced, heated and dried by the heating means, and means, communicating with the atmosphere, for the outlet of air from the show case, which show case, except for said inlet and outlet, otherwise normally forms a closed area.

2. For use in preventing a window of a show case from becoming obscured by condensation upon the inside surface of the window of aqueous vapour, apparatus formed as a single structure applicable to the show case as a complete unit and comprising electric heating means for heating and drying air, means, communicating with the atmosphere, for inlet into the show case of air induced, heated and dried by the heating means, means for the outlet of air from the show case, and a head portion of grid character formed for inlet and outlet of air, which show case, except for said inlet and outlet, otherwise normally forms a closed area.

3. For use in preventing a window of a show case from becoming obscured by condensation upon the inside surface of the window of aqueous vapour, apparatus formed as a single structure applicable to the show case as a complete unit and comprising air uptake means communicating with the atmosphere, electric heating elements housed therein for inducing, heating and drying air, air downtake means at two opposite sides of the uptake means and communicating with the atmosphere, and a head portion of grid character formed for passage of air from the uptake means into the show case and for passage of air from the show case into the downtake means, which show case except for communication with the said uptake and downtake, otherwise normally forms a closed area.

4. For use in preventing a window of a show case from becoming obscured by condensation upon the inside surface of the window of aqueous vapour, apparatus formed as a single structure applicable to the show case as a complete unit and comprising air uptake means communicating with the atmosphere, electric heating elements housed therein for inducing, heating and drying air, air downtake means at two opposite sides of the uptake means and communicating with the atmosphere, and a head portion of grid character formed for passage of air from the uptake means into the show case and for passage of air from the show case into the downtake means, admission of air to the uptake means being at a level appreciably below the head portion and exit from the downtake means being at a level below the head portion, admission and exit being so arranged as to prevent issuing air from being directly drawn again into the uptake means, the show case, except for communication with the said uptake and downtake, otherwise normally forming a closed area.

5. For use in preventing a window of a show case from becoming obscured by condensation upon the inside surface of the window of aqueous vapour, apparatus formed as a single structure applicable to the show case as a complete unit and comprising a grid mounted in the bottom of the structure, a tubular casing communicating with the atmosphere and connected to and extending below the grid, an electric heating unit in said casing for inducing, heating and drying air, and exhaust conduits formed laterally of the tubular casing and communicating with said grid and with the atmosphere, the show case, except for communication with the tubular casing and exhaust conduits, otherwise normally forming a closed area.

6. For use in preventing a window of a show case from becoming obscured by condensation upon the inside surface of the window of aqueous vapour, apparatus formed as a single structure applicable to the show case as a complete unit and comprising a grid mounted in the bottom of the structure, an outer tubular casing communicating with the atmosphere and connected to and extending below the grid, a tubular member within the outer casing terminating below the grid, an electric heating unit within the inner tubular member and exhaust conduits formed laterally of the tubular casing and communicating with said grid, the show case, except for communication with the tubular casing and exhaust conduits, otherwise normally forming a closed area.

7. For use in preventing a window of a show case from becoming obscured by condensation upon the inside surface of the window of aqueous vapour, apparatus formed as a single structure applicable to the show case as a complete unit and comprising a grid mounted in the bottom of the structure, a tubular casing communicating with the atmosphere, and having a flaring upper portion connected to the grid, exhaust conduits formed laterally of the flaring portion of the tubular casing and communicating with the grid and with the atmosphere and terminating above the bottom of the casing, and an electric heating unit in said casing for inducing, heating and drying air, the show case, except for communication with the tubular casing and exhaust conduits, otherwise normally forming a closed area.

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