June 25, 1940. H. J. GALEY 2,205,523

WINDOW CONSTRUCTION

Filed Feb. 11, 1939

Fig. 1.

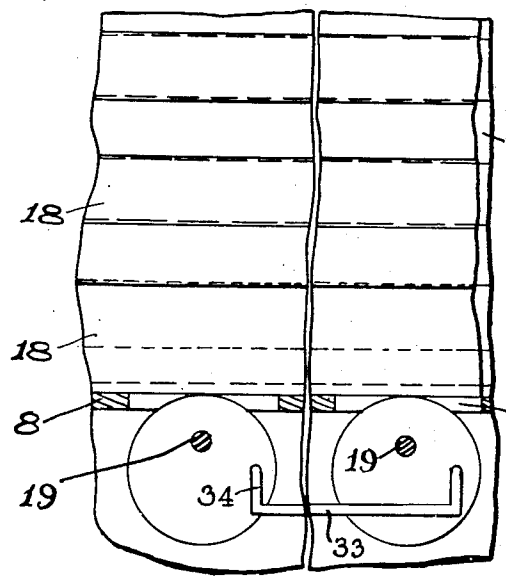


Fig. 3.

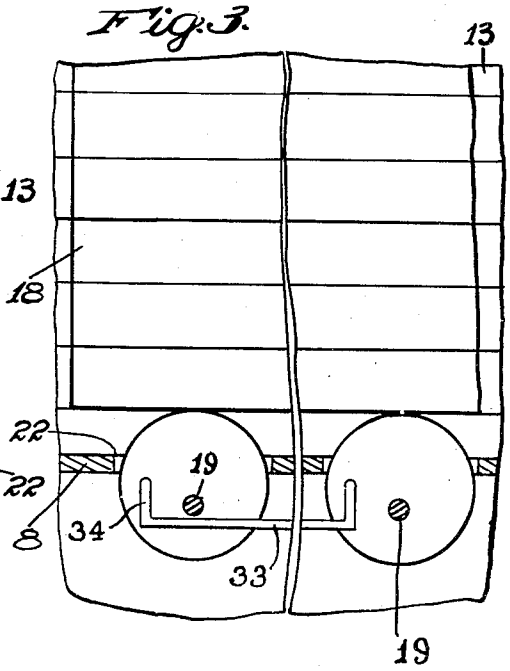


Fig. 2.

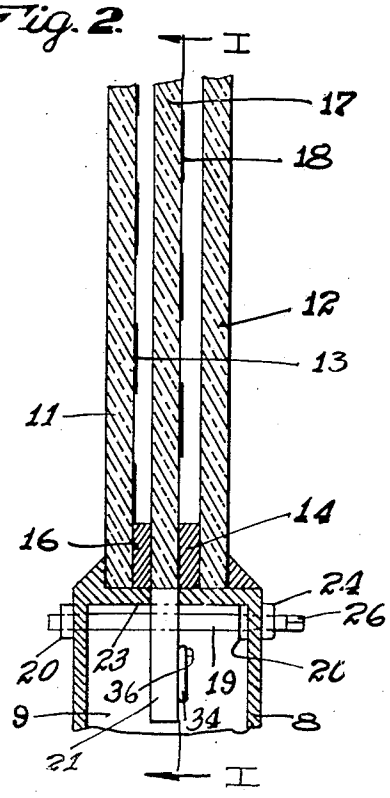
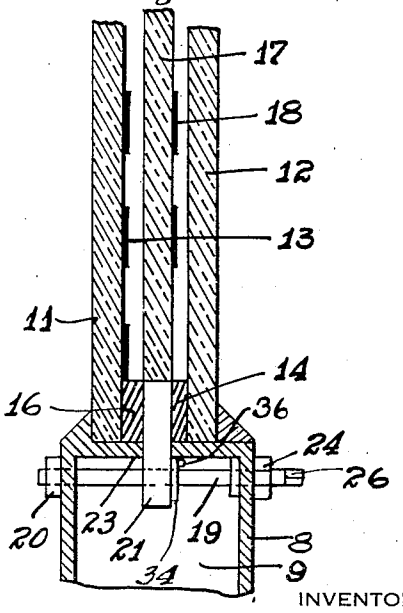


Fig. 4.



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Patented June 25, 1940 2,205,523

UNITED STATES PATENT OFFICE

2,205,523

WINDOW CONSTRUCTION

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Application February 11, 1939, Serial No. 255,913

3 Claims. (Cl. 20—56.5)

The present invention relates to window constructions and notably to window constructions of the double or multiglazed type.

One object of the invention is to provide a simple and convenient multiglazed window construction including means for controlling the radiation passing therethrough, and for deflecting undesirable heat before it gains access to the room or building in which the window is employed.

A second object of the invention is to provide a window construction of the foregoing type which is of substantially the same thickness as a conventional window containing the same number of sheets or panes of glass.

These and other objects of the invention will be apparent from consideration of the following specification and the appended claims.

It has heretofore been recognized that conventional windows involving a single plate or pane of glass were relatively inefficient barriers to the transmission of heat to or from the interior of buildings in which they were installed. For example, the outer surface of the glass, during cold weather, became chilled and in turn caused chilling of the atmosphere within the buildings in which the windows were employed. Conversely when the atmosphere without the buildings was warmer than the air within the buildings heat was transmitted from the exterior to the interior.

In order to obviate this type of heat loss it has been proposed to provide windows having a plurality of sheets or panes of glass so spaced with respect to each other as to provide insulative dead air chambers. By use of this type of construction heat losses by conduction and convection were substantially reduced. However, it was found difficult to exclude moisture from the interiors of such multiglazed windows and in time moisture produced a permanent haze upon the glass.

Although multiglazed windows involving two or more spaced plates of glass substantially reduce conduction and convectional transmission of heat to or from the interior of a building, such constructions within themselves do not constitute satisfactory barriers to radiant heat to which the glass is transparent. One conventional method of excluding this type of heat has involved the provision of screens or shades secured within the building in which the windows are employed. By use of such screens the amount of light transmitted through the units can be regulated fairly satisfactory. However, the screens act as collectors of dust and, moreover, in warm weather the screens become heated by radiant heat absorbed and, in turn, heat the indoor air. Of course after the heat once gains access to the interior of a building, it can not be removed except by refrigerating apparatus or other cooling devices, which are expensive to construct and maintain. For this reason, it is preferable to intercept it before it gains access to the interior.

In accordance with one feature of the present invention the foregoing difficulties are substantially obviated by provision of a multiglazed unit including inner and outer sheets or panes of glass, one of which carries or has associated therewith a series of parallel, spaced strips or bars of opaque or translucent material and an interposed element which is vertically reciprocable in the plane of the window, and carries or has associated therewith strips or bars approximately corresponding in spacing and dimension to those first mentioned. By proper adjustment of the position of the movable member the bars on the latter can be made to coincide with or alternate with the corresponding bars associated with the sheet of glass in such manner as to control the degree of radiation passing through the construction.

For a better understanding of the invention reference may now be had to the accompanying drawing in which like numerals refer to like parts and in which Figure 1 is a fragmentary cross-sectional view taken substantially upon the line I—I of Figure 2.

Figure 2 is a fragmentary, perpendicular cross-sectional view taken transversely of the plane of a window construction embodying the invention; and

Figures 3 and 4 are respectively views corresponding to views 1 and 2, but showing the movable element in position to permit the passage of radiation.

As shown in the drawing a window constructed in accordance with the provisions of the present invention includes a frame element 8 which may be hollow as indicated at 9 and in which are disposed spaced sheets or panes of glass 11 and 12, that are held in position in any convenient manner. One of the sheets (preferably the outer) is provided with a grid comprising spaced stripes or bars 13 of partially or completely opaque material. For example, a reflective material such as a metal (aluminum) or the like is sprayed while in molten condition upon the glass to provide suitably spaced and proportioned stripes. The bars 13 may also comprise an open grid or

grill of opaque material supported independently of the glass. Spacer elements 14 and 16 of rubber, wood or other material, are disposed in contact with the inner faces of the panes or sheets 12 and contact with the opposite faces of a vertically reciprocable plate 17, of glass or other material having bars or stripes 18 corresponding to the strips 13 formed thereon. It will be apparent that element 17 may comprise a simple, opaque, open grid structure involving rigid bars corresponding in width and spacing to the bars 13. Bars 13 and 18 are so proportioned that they cover about half of the surface to which they are applied.

Plate 17 may be vertically reciprocated by any convenient mechanism; however, for purposes of illustration is shown a plurality of horizontal shafts 19 extending transversely through the frame 8 and having suitable bearings in sealing glands or stuffing boxes 20 in the latter. Shafts 19 are provided with cam disks 21 rigidly secured thereto and extending upwardly through a slot or slots 22 formed in the inner wall 23 of the frame. One of the projecting ends of one shaft is threaded to receive lock-nuts 24 which may be, at will, tightened frictionally to engage the adjacent face of the frame and thus to lock the shaft in any desired position or adjustment. One shaft may also include a shank portion 26 of square or other non-circular cross-section to which a wrench may be applied for rotating it.

The cams are designed to rotate through an angle somewhat less than 180°, and are interconnected by a rod 33 having upturned end portions 34 which are pivotally secured as indicated at 36 to the cams in such manner that by rotating one the other is simultaneously actuated to a corresponding position.

In the operation of the invention the lock-nut 24 may be loosened and the shaft 19 then rotated by any convenient wrench in order to raise or lower the element 17 to bring the bars 18 into or out of register with the bars 13. In this manner it is possible to control the amount of radiation passing through the construction. Light and heat not passing between the bars is reflected back to the exterior of the building without affecting the temperature therewithin.

If the cavity 9 in frame 8 is properly sealed, it will be apparent that entrance of air and dust is excluded.

The construction is simple of design and it will be apparent that the thickness thereof may be identical with that of a conventional triple glazed unit. Moreover, the screen construction will last as long as the unit in which it is employed.

The form of the invention herein shown and described is to be considered merely as illustrative. It will be apparent that numerous modifications may be made therein without departure from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. A multiglazed window construction comprising two sheets of glass disposed in a frame, the sheets having transverse stripes of at least partially opaque material directly adherent thereto, the width of the stripes on one sheet approximately corresponding to the spacing between the stripes on the other sheet, one sheet being reciprocable in the plane thereof to bring the stripes thereon into register either with the stripes or the spacings on the other sheet, whereby to control the radiant light and heat passing through the sheets.

2. A triple-glazed window construction comprising three sheets of glass disposed in a frame in spaced parallel relation with respect to each other, two of the sheets including the intermediate sheet being provided with spaced parallel stripes of at least partially opaque material adherent thereto, the stripes on one sheet corresponding approximately in width to the spacing between the stripes on the other sheet, the intermediate sheet being reciprocable selectively to bring the stripes thereon into register with the stripes or the spacing between the stripes on the other sheet, said intermediate sheet dividing the space between the two outer sheets into two distinct dead air chambers.

3. A multiglazed window construction for a building wall, comprising two spaced sheets of glass, the outer of said sheets being provided with spaced opaque stripes of adherent material, a grid intermediate the two sheets comprising bars of opaque material corresponding in width to the spacing between the stripes of the outer sheet, said grid being reciprocable selectively to bring the bars of the grid into register with the stripes or the spacing between the stripes.

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