

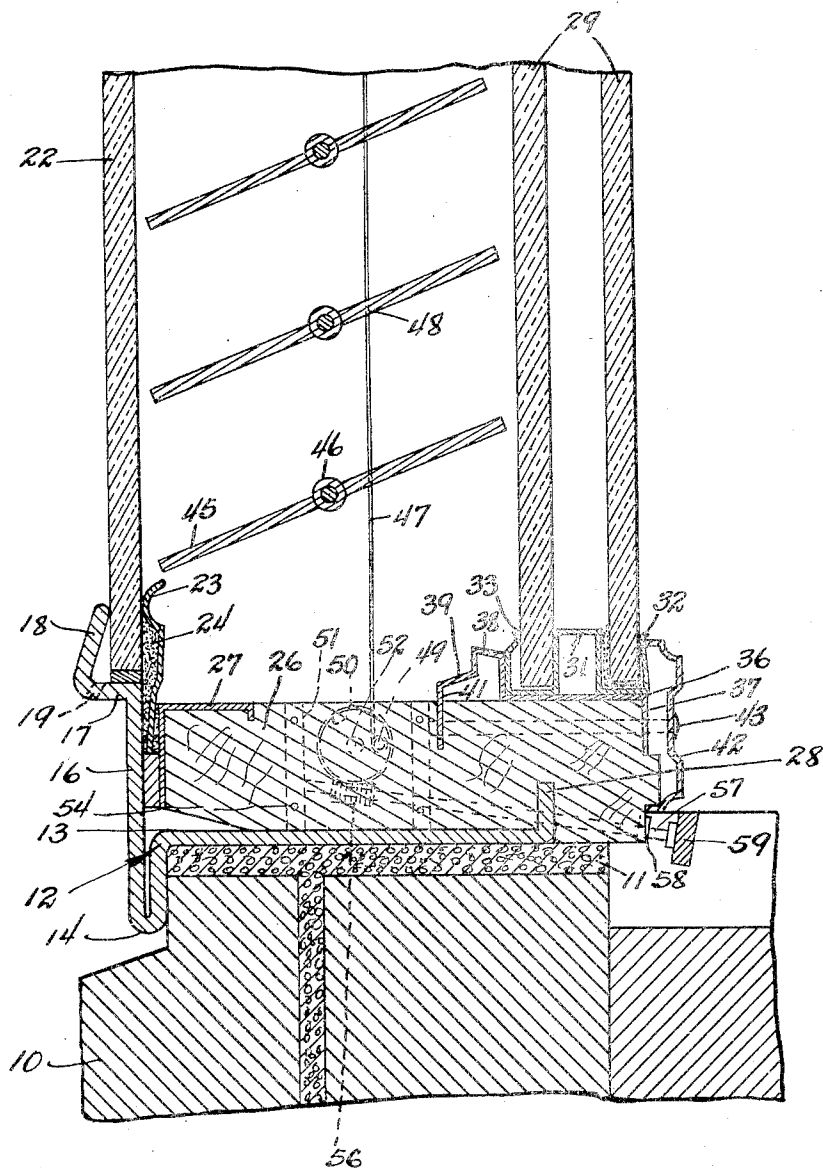
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MULTIGLAZED WINDOW AND LIGHT SCREEN THEREFOR

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MULTIGLAZED WINDOW AND LIGHT
SCREEN THEREFOR

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2 Claims. (Cl. 20—56.5)

The present invention relates to windows and notably to windows of the multiglazed type.

One object of the invention is to provide a frame construction for a multiglazed window which is simple in design, which is of low conductivity to heat and in which one or more of the plates or panes of glass can be removed to admit of access to the interior of the construction without disturbing the companion pane or panes.

A second object of the invention is to provide a multiglazed window construction by means of which light can be intercepted exteriorly of the building employing it, or optionally admitted in any desired intensity.

A third object of the invention is to provide a construction of the foregoing type in which the light-excluding and regulating means is protected from dust and air.

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 transfer 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 insulated dead air chambers. By use of this type of construction heat transfer by conduction and convection was 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. Moreover, the frames usually included metallic parts which were improperly insulated and provided paths for transmission of heat to and from the interiors of the buildings. Chilled metallic surfaces within the buildings were thus provided and these constituted zones for objectionable condensation of moisture.

The present invention includes as one feature the provision of a simple frame and clamping structures for multiglazed units, in which all highly conductive parts are effectively insulated and which by proper manipulation will permit certain of the sheets to be removed from the frames to give access to the interiors without disturbing the other plates. This is desirable because it admits of cleaning of the glass without completely opening the buildings in which the glass is employed to the atmosphere.

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 satisfactorily. 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. For this reason it is preferable to intercept it before it gains access to the interior.

In accordance with one of the features of the present invention, the foregoing difficulties are substantially obviated by provision of louver-like screens so mounted between the sheets or panes of glass of multiglazed units as to admit of control of the amount of light passing through the windows and, also, to intercept radiant heat before it gains access to the interior of the building in which the units were employed.

For a better understanding of the invention reference may now be had to the accompanying drawing in which the single figure is a fragmentary cross-sectional view through a portion of the window embodying the invention. In the drawing like numerals refer to like parts throughout.

In the drawing a wall construction 10 of conventional design defines a window opening, the edges of which are capped or crowned by a layer

11 of cement or other suitable facing material. Only the bottom portion or sill structure of the frame of the window is disclosed. However, it will be apparent that the jambs or sides and the top or lintel structure are essentially the same and need not be described. The structure includes a bar 12 disposed upon the facing material and comprising a strip of metal such as steel or aluminum. This strip as shown comprises a horizontal web-like rear section 13 and a downwardly-extending flange 14 comprising a portion replicately upwardly bent to provide upper vertical flange 16. The upper marginal portion of the latter is horizontally offset to provide a shoulder 17 and a lip 18. Holes 19 may be provided in shoulder 17 to permit escape of any moisture that may condense in or run into the space back of the lip. Pane or plate 22 of glass rests upon the shoulder and the outer face of the margin thereof abuts against and is retained from outward displacement by the lip. The glass is maintained from inward displacement from the shoulder by means of clip-like member 23, which is inwardly sprung away from the glass to receive a plastic packing 24 that acts as a seal to prevent the entrance of air and moisture to the interior of the construction. The lower portion of the clip 23 is secured between the inner face of flange 16 and the outer edge of wooden sill or bar 26 that rests upon and constitutes an insulative covering for section 13 of bar 12. If desired the edge may be covered by means of a metallic plate 27 of inverted L cross-section.

Bar 26 is secured from inward displacement from bar 12 by means of a shoulder or lip 28, upwardly bent along the rear margin of the web 13 and engaging a corresponding slot formed in the lower face of the bar. A spaced sheet or a plurality of spaced sheets of glass 29 are mounted upon the inner edge of the bar 26 in order to provide one or more closed insulative chambers. In the construction illustrated two sheets or plates are secured in spaced relation to provide a conventional double-glazed unit by means of a marginal frame 31, comprising spaced channels 32 and 33 interconnected by a web 34. The space about the edges of the glass within the channels may be packed or sealed by means of tape or sealing composition of any convenient type.

The two spaced plates of glass are secured as a unit upon the edge of the sill by means of a construction involving a plate 36 having a downwardly-extending exterior flange 37 and an upwardly-extending interior flange 38, which provides an abutment for the frame of the glass. Flange 38 is also provided with a lip 39, the marginal portion 41 of which is downwardly directed into a slot formed in the upper face of the bar 26.

Cover plates or strips 42 are secured to the bar 26 by means of bolts 43 extending through suitable transverse openings in the bar and threaded at their inner extremities through openings in the downwardly-extending lip 41. By suitably tightening the bolts the cover plate is drawn inwardly to press the frame 31 against the abutment 38.

A suitable screen structure for use within the chamber between the plate 22 and the inner of the plates 29, to regulate the admission of light, comprises louver-like slats or bars 45, which rotate or tilt about axially disposed pivots 46 journaled in the jambs of the units.

Mechanism for tilting the bars includes a vertical bar 47 which is pivoted as indicated at 48 to the ends of the bars 45, at points slightly

offset with respect to the pivots 46. At its lower extremity bar 47 is pivoted upon a crank-pin 49 upon the face of a worm-gear 50 that rotates within slot 51 in bar 26, upon a horizontal shaft 52. The shaft has bearings in the end of bar 26 and in a cover plate 53 for slot 51 which is secured to the bar by means of screws 54 or other suitable fastening devices. The worm-gear is rotated about its axis by means of a worm 56, secured upon the inner extremity of a shaft 57 which rotates in a transversely and upwardly-extending opening in the bar 26. At its outer extremity the shaft extends through a suitable stuffing box 58 which is designed to seal the passage about the shaft from the entrance of air or moisture. The projecting portion of the shaft may be provided with a knurled head 59, by means of which the shaft may be rotated in turn to rotate the worm-gear 51. As the latter is rotated the shaft 47 is oscillated to cause tilting of the bars 45 about their horizontal axes. It will be observed that the bars may be tilted so that either face thereof is directed to the exterior of the construction. If desired one face may be covered with a highly reflective material such as aluminum paint, which is susceptible of reflecting back most of the light and heat striking it. The face of the members may be coated with a black or dark composition designed to absorb a large proportion of the radiant energy striking it.

It will be observed that in the construction described insulative bar 26 completely covers all metallic parts that are exposed to the exterior of the building; this obviates condensation of moisture upon metallic parts. Bars 45 may, when desired, be so adjusted as to absorb or reflect back radiant heat and light before it enters the building. Therefore, it does not increase the temperature of the building. The bars by reason of their positions within the units are protected from dust and decay. The bars when tilted also tend to divide the compartment in which they are disposed into a series of small cells which are more effective as barriers to passage of heat than a single large space.

Panes 29 are readily removable as a unit to admit of repair or changes in the louver construction and, also, to admit of cleaning the inner surfaces of the glass.

The present application is a division of my co-pending application Serial No. 252,915, filed January 26, 1939.

Although only the preferred form of the invention has been shown and described, it will be apparent that this is only illustrative, and numerous modifications may be made therein without departing from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. A triple glazed window construction comprising a frame, means for securing an outer sheet of glass in the frame, a pair of spaced sheets of glass secured together by a channel element and providing an independently sealed double glazed unit, the frame and the unit being formed to permit insertion and removal of the unit as a single body from the side of the frame opposite to the outer sheet of glass, and means to secure said unit in the frame in spaced relation to the outer sheet, said means comprising a screw-actuated clamping element engaging the unit and holding it in place and being operable from the exterior of the construction on the side on which the unit is disposed, whereby the unit may be re-

moved and reinserted in the frame while the outer sheet is retained in position in the frame.

2. A triple-glazed window construction comprising a frame, means for securing an outer sheet of glass in the frame, a pair of spaced sheets of glass secured together by a channel element and providing an independently sealed double-glazed unit, the frame and the unit being formed to permit insertion and removal of the unit as a single body from the side of the frame opposite to the outer sheet of glass, and means to secure said

unit in the frame in spaced relation to the outer sheet, said means comprising a manually operable clamping element engaging the unit and holding it in place, and being operable from the exterior of the construction on the side on which the unit is disposed to engage or release the unit, whereby the unit may be removed and inserted in the frame while the outer sheet is retained in position in the frame.

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