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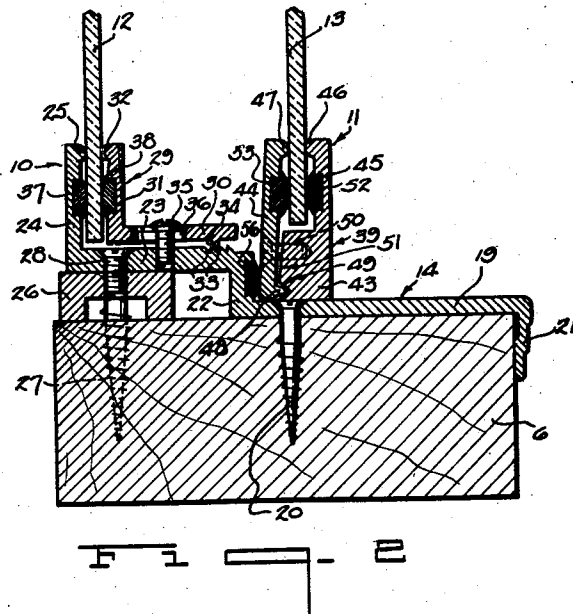
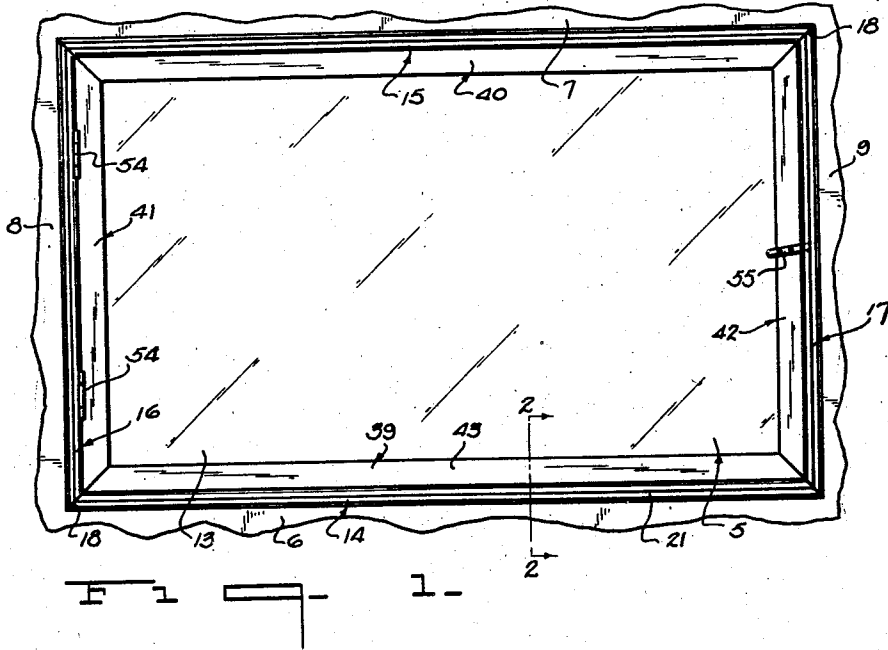
C. D. LOWRY

2,228,358

DOUBLE GLAZED WINDOW

Filed May 23, 1938

2 Sheets-Sheet 1



Inventor  
CLYDE D. LOWRY.

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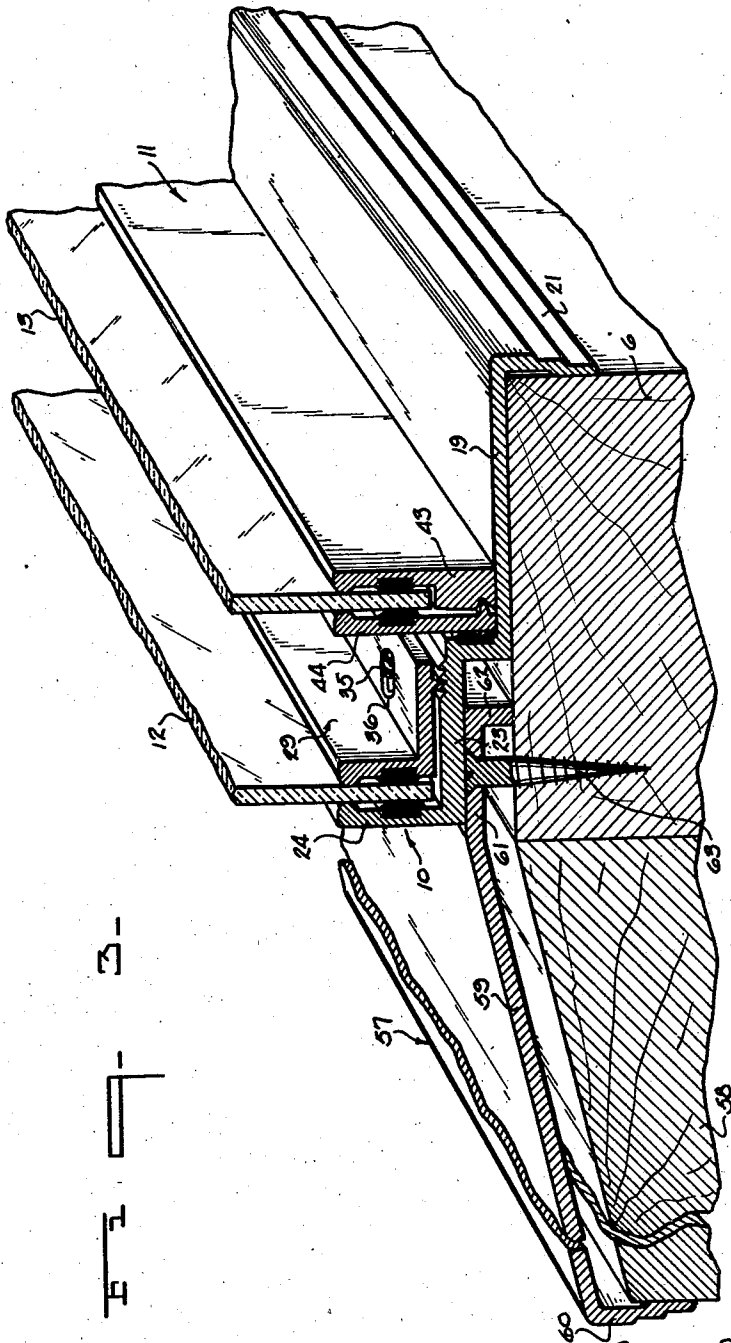
Frank Fraser  
Attorney

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Inventor  
CLYDE D. LOWRY.

3B

Frank Fraser  
Attorney

# UNITED STATES PATENT OFFICE

2,228,358

## DOUBLE GLAZED WINDOW

Clyde D. Lowry, Toledo, Ohio, assignor to Libbey-Owens-Ford Glass Company, Toledo, Ohio, a corporation of Ohio

Application May 23, 1938, Serial No. 209,491

2 Claims. (Cl. 189-64)

The present invention relates broadly to windows in general and more particularly to improvements in double glazed window constructions.

5 The use of double glazed windows, including two sheets or panes of glass spaced from one another and sealed around the edges thereof to provide a dead air space therebetween, has long been desirable wherever it is important to reduce heat transfer and to prevent condensation of moisture upon glass in glazed openings. Thus, double glazed windows have the effect of greatly retarding the escape of heat therethrough from the inside of a building during the winter as well as minimizing the passage of heat into the building from the outside during the summer. This is due to the fact that the air-tight space between the glass sheets is an exceedingly poor conductor of heat so that a double glazed window possesses much greater insulating properties than a single sheet or pane of glass. Also, the use of double glazed windows is particularly advantageous in air conditioned structures.

25 According to the invention, there is provided a double glazed window construction including inner and outer sashes in which are mounted sheets or panes of glass, said sashes being associated with one another in a novel manner to effectively seal the space therebetween, while at the same time permitting separation of the sashes to allow for easy cleaning of the inner surfaces of the two sheets or panes of glass.

30 Another feature of the invention is the provision of a double window construction wherein the sheets or panes of glass are mounted in a manner that they are rendered absolutely tight without the use of putty or mastic of any kind.

40 A further feature of the invention is the provision of a double window of relatively simple, yet strong, sturdy, and durable construction, which can be easily and conveniently assembled and mounted in the window frame and embodying means for applying a yielding, cushioned pressure to the sheets or panes of glass to minimize breakage thereof.

50 A still further feature of the invention is the provision of a double window of the above character, embodying inner and outer sashes so constructed as to accommodate glass sheets or panes of different thicknesses and also of such construction that either one of the sheets or panes of glass can be readily removed from the window without necessitating the removal of the other sheet or pane or disturbing its mounting.

55 Other objects and advantages of the inven-

tion will become more apparent during the course of the following description, when taken in connection with the accompanying drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the same:

Fig. 1 is a face view of a double window constructed in accordance with the invention;

Fig. 2 is a vertical section through the bottom of the double window taken substantially on line 2-2 of Fig. 1; and

Fig. 3 is a perspective sectional view showing a slightly modified construction.

In the embodiment of the invention illustrated in Figs. 1 and 2, the improved double window is designated in its entirety by the numeral 5 and is shown as being mounted in a substantially rectangular window frame consisting of a horizontal sill 6, horizontal head jamb 7, and opposite vertical side jambs 8 and 9.

20 The double window 5 comprises an outer metallic sash 10 and an inner metallic sash 11 within which are mounted the sheets or panes of glass 12 and 13 respectively. The outer sash 10 is of a shape corresponding to the shape of the window frame and is adapted to fit snugly therein, while the inner sash 11 is preferably hingedly carried by said outer sash so that it is movable relative thereto as will be more fully hereinafter described. When glazing a rectangular window 30 frame, the outer sash 10 is likewise rectangular and comprises a bottom section 14, top section 15, and vertical side sections 16 and 17 disposed opposite the sill 6, head jamb 7 and side jambs 8 and 9 respectively, being mitered at their adjacent ends as indicated at 18.

40 The several sections 14 to 17 of the outer sash 10 are of substantially the same construction and therefore the bottom section 14 only will be described in detail although it will be understood that this construction is duplicated at the top and sides of the window. The bottom section 14 comprises a horizontal base or cover plate 19 resting upon the sill 6 and fastened thereto by wood screws 20; the forward end of said cover plate being provided with a downturned flange 21 overlapping the inner edge of the sill to give the desired ornamental appearance.

50 The cover plate 19 is provided at its rear end with a substantially vertical web 22 and formed integral therewith is a rearwardly extending horizontal ledge 23 spaced from the sill 6. Formed integral with the outer end of the horizontal ledge 23 is a vertical flange 24 provided

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at its upper end with a bead 25 adapted to engage the outer face of the glass sheet 12. Arranged beneath the horizontal ledge 23 and supported upon the sill 6 is an inverted channel bar 26 secured to said sill by wood screws 27, while the ledge 23 is secured to said channel bar 26 by machine screws 28.

The means for clamping the glass sheet 12 against the outer member 24 includes a substantially L-shaped clamping member 29 having a substantially horizontal base 30 and a substantially vertical flange 31 provided at its upper end with a bead 32 adapted to engage the inner face of the glass sheet 12 preferably directly opposite bead 25. The upper surface of the horizontal ledge 23 is provided with a series of longitudinally extending teeth 33 which incline rearwardly toward the glass sheet 12 while the under surface of the horizontal base 30 of clamping member 29 is formed with a beveled rib 34 adapted to engage the teeth 33 and to fulcrum thereon. The clamping member 29 is secured to the ledge 23 by the desired number of screws 35 which pass through slots 36 in the base 30 of said clamping member.

When securing the glass sheet 12 in place, the said sheet is first moved into engagement with the outer member 24 and the clamping member 29 is then moved inwardly against the glass sheet and the rib 34 thereof engaged between two of the teeth 33. The screws 35 are then tightened and when this is done the clamping member 29 will be rocked upon its fulcrum 34 to cause the desired clamping pressure to be exerted upon the glass sheet. The provision of the teeth 33 and slots 36 through which the fastening screws 35 pass, permit the use of glass sheets of different thicknesses. In order to obtain a yielding, cushioned pressure against the glass sheet 12, the outer and inner members 24 and 31 are adapted to carry resilient, compressible cushioning strips 37 and 38 preferably of rubber, rubber composition or the like which engage the outer and inner faces respectively of the said sheet. These cushioning strips 37 and 38 serve not only to hold the glass sheet absolutely tight in the sash but further act to minimize breakage of the glass.

The inner sash 11 is carried by the outer sash 10 and the cover plates 19 of the outer sash sections 14 to 17 define a so-called sub-frame within which the said inner sash is received. Thus, the inner sash 11 also comprises a bottom section 39, top section 40, and vertical side sections 41 and 42 disposed opposite and contacting the cover plates 19 of the bottom, top, and side sections 14, 15, 16, and 17 respectively of the outer sash 10.

Each section 39 to 42 of the inner sash comprises a front or outer member 43 and a rear or inner member 44, said front member being in the form of a longitudinally extending bar provided with a laterally directed flange 45 formed at its inner end with a bead 46 adapted to engage the outer face of the glass sheet 13. The rear member 44 consists of a substantially flat plate provided at its inner end with a bead 47 adapted to engage the inner face of the glass sheet 13 opposite bead 46. Formed upon the inner surface of the rear member 44, adjacent its outer end, is a beveled rib 48 seated in a groove 49 in the rear face of the front member 43 and constituting a fulcrum upon which the said rear member is adapted to rock. The rear member 44 is secured to the front member 43 by screws or

the like 50 and upon tightening of these screws, the said rear member will be rocked upon its fulcrum 48 to move the inner end 47 thereof toward the glass sheet. The inner face 51 of the front member 43 is beveled as shown to permit sufficient rocking movement of the rear member 44 to accommodate glass sheets of different thicknesses.

The flanges 45 of the front members 43 and the rear members 44 of the inner sash sections 10 are also provided with yieldable cushioning strips 52 and 53 respectively of rubber, rubber composition or the like which are adapted to exert a cushioned clamping pressure against the glass sheet 13 upon tightening of the screws 50 whereby to firmly secure the glass sheet in place in the sash as well as minimize danger of breakage of the glass.

The inner sash 11 is adapted to be pivotally carried by the outer sash 10 so that the said inner sash can be opened and closed independently of the outer sash. To this end, the inner sash may be hinged to the outer sash by one or more hinges 54 of any suitable type and these hinges may be provided either at the top, bottom, or side of the sash, as may be found most desirable. In this manner, the inner sash can be readily opened to permit cleaning of the inner surfaces of the two sheets of glass 12 and 13 and likewise to permit the replacement of either sheet should it become broken. When the inner sash 11 is in closed position, as shown in Fig. 2, it is completely received within the sub-frame formed by the cover plates 19 of the outer sash sections 14 to 17. The inner sash can be secured in closed position by any desired means such as a catch 55.

The vertical walls 22 of the outer sash sections are provided in their front faces with compressible cushioning strips 56 of rubber, rubber composition or the like which abut the inner faces of the rear members 44 of the inner sash sections when the said inner sash is closed, whereby to effectively seal the space between the two sheets of glass to render it substantially airtight. As pointed out above, the advantages to be gained by the use of double glazed windows over single windows are well known in the art; their use being of value wherever it is important to reduce heat transfer and to prevent condensation of moisture upon glass in glazed openings.

The above construction not only permits the glass sheets 12 and 13 to be easily and conveniently separated for cleaning but also for replacing either or both of the glass sheets in case of breakage. The metal sections used in the construction of the double window are preferably though not necessarily of extruded aluminum alloy, while the cushioning strips are preferably of extruded rubber. The use of extruded rubber stripping, as shown, renders the window absolutely tight without the use of putty or mastic of any kind and these rubber strips being under constant pressure would have an exceptionally long life. The double window construction herein provided can also be fabricated at the factory into standard size complete units for quick and simple installation on the job.

The construction illustrated in Fig. 3 is substantially the same as that described hereinabove with the exception that an outer cover or sill plate 57 is substituted for the channel bar 26 in Fig. 2. The sill plate 57 is adapted for use when it is desired to also cover an exterior sill 58 which may be of wood, brick, or stone. The

sill plate 57 comprises an inclined body portion 58 arranged above the sill 58 and provided at its outer end with a downturned flange 60 which overlaps the outer edge of the sill to give the desired ornamental effect. The body portion 58 of the sill plate is formed at its inner end with a substantially horizontal supporting portion 61 terminating in a downturned flange 62, said horizontal supporting portion 61 being received beneath the horizontal ledge 23 of the outer sash 10 and secured to the sill 6 by wood screws 63.

In assembling the construction above described, the outer sill plate 57 is first installed by moving it inwardly until the flange 60 thereof engages the outer edge of sill 58, with the inner end 62 thereof resting upon sill 6. The screws 63 are then threaded into the sill 6 to rigidly secure the sill plate in position. The outer and inner sashes 10 and 11 can then be installed from the inside of the window frame and after the outer sash 10 is located in proper position it can be secured to the horizontal supporting portion 61 of sill plate 57 by suitable fastening means, such as the machine screws 28 shown in Fig. 2.

The construction and arrangement of the outer sash 10 is considered to be new and novel apart from its relation to and association with the inner sash 11 and can be used by itself, with very little modification, for single glazing.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. In a window construction, a metal sash adapted to be mounted in a window frame and comprising outer and inner members for clamping a pane of glass therebetween, said outer member having a substantially vertical portion engaging the outer face of the pane of glass and a substantially horizontal portion extending in-

wardly beyond the glass, said inner member also having a substantially vertical portion engaging the inner face of the pane of glass and an inwardly directed substantially horizontal portion disposed above the horizontal portion of said outer member, the horizontal portion of said outer member being provided upon its upper surface with a plurality of teeth extending longitudinally thereof, while the horizontal portion of said inner member is provided upon its bottom surface with a beveled rib engaging said teeth, and means for connecting the horizontal portions of said outer and inner members together and for rocking the said inner member upon the said teeth.

2. In a window construction, a metal sash adapted to be mounted in a window frame and comprising outer and inner members for clamping a pane of glass therebetween, said outer member having a substantially vertical portion provided with a bead engaging the outer face of the pane of glass and a substantially horizontal portion extending inwardly beyond the glass, said inner member also having a substantially vertical portion provided with a bead engaging the inner face of the pane of glass and an inwardly directed substantially horizontal portion disposed above the horizontal portion of said outer member, the horizontal portion of said outer member being provided upon its upper surface with a plurality of teeth extending longitudinally thereof, while the horizontal portion of said inner member is provided upon its bottom surface with a beveled rib engaging said teeth, screws passing loosely through the horizontal portion of said inner member and threaded in the horizontal portion of said outer member for connecting the said outer and inner members together and for rocking said inner member upon said teeth, and compressible means carried by the vertical portions of said inner and outer members outwardly of said glass engaging beads for exerting a yielding, cushioned pressure upon the glass.

CLYDE D. LOWRY.