

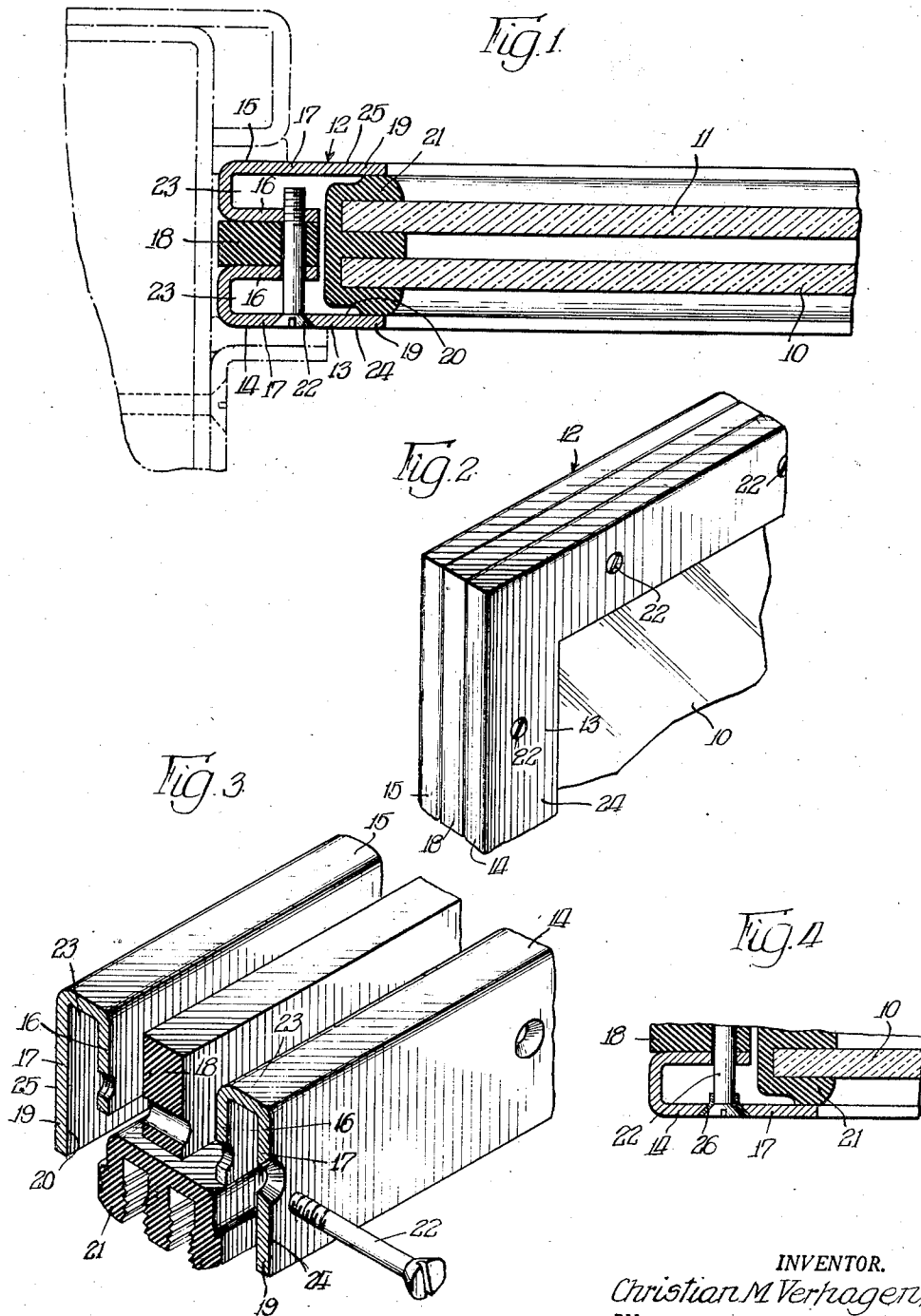
June 11, 1946.

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2,402,105

MULTIPLE GLASS SASH

Filed March 8, 1943



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UNITED STATES PATENT OFFICE

2,402,105

MULTIPLE GLASS SASH

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Application March 8, 1943, Serial No. 478,327

7 Claims. (Cl. 20—56.5)

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The present invention has to do with double glass sash of the type commonly used in the window openings of air conditioned railway cars, buses and other vehicles.

The main purpose of the invention is to provide, in a double glass sash, an improved rail structure which has exceptionally low heat conductivity between its inner and outer faces, is quite inexpensive to manufacture, can be fabricated advantageously from sheet steel, is strong and durable, and can be taken apart easily for re-glazing.

Other more specific objects and advantages of the invention will be apparent to those skilled in the art upon a full understanding of the novel rail structure.

While the features which constitute the invention are especially well suited for incorporation in the rails of sash employing two panes of glass, such features are also applicable to the rails of sash employing more than two panes of glass.

One form of the invention is presented herein by way of illustration, but it will of course be appreciated that the invention is susceptible of being embodied in other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawing:

Fig. 1 is a horizontal section through a double glass sash having rails constructed in accordance with the invention;

Fig. 2 is a perspective view of one of the corners of the sash;

Fig. 3 is a separated perspective view of the several parts of the rail, showing fragmentary sections of the parts in unassembled condition; and

Fig. 4 is a fragmentary section, corresponding to a portion of Fig. 1, showing a minor modification in the insulation of the fastening screws.

The sash shown in the drawing is characterized by two panes of glass 10 and 11 and a rectangular supporting frame 12. As all four rails of the frame 12 may advantageously be of the same construction a description of one of the rails, namely the side rail 13, will be sufficient for the purpose of this disclosure.

The rail 13 includes two metal channel members 14 and 15, each of which opens inwardly toward the glazing area of the sash and is provided at one side with a relatively narrow flange 16 and at the other side with a relatively wide flange 17. The channel members are preferably made of sheet steel, but may of course be made

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of any other material possessing the requisite strength and rigidity.

A non-metallic insulating strip 18 of hard fiber, laminated fabric, synthetic resin, or other suitable composition, is positioned between the channel members 14 and 15, in engagement with the narrow flanges 16 of the latter. The inwardly projecting portions 19 of the wide flanges 17 of the channel members form between the same a glazing groove 20.

A resiliently compressible glazing strip 21 of rubber or other suitable material is positioned in the groove 20 in sealed engagement with the edges of the panes 10 and 11. The glazing strip acts to position the panes in spaced parallel relation to each other. While the glazing strip is shown as being formed in a single piece, it may of course be constructed in two or more structurally separated pieces.

The channel members 14 and 15 are clamped together on the interposed insulating strip 18 by a plurality of screws 22, which screws pass through both flanges of the channel member 14 and the insulating strip 18 and are threaded into the narrow flange only of the channel member 15. The screws 22 serve to clamp the channel members 14 and 15 tightly against the insulating strip 18, with the glazing strip 21 resiliently compressed between the inwardly projecting portions 19 of the wide flanges 17 by the action of the screws.

The channel members 14 and 15 are preferably duplicates of each other, and the insulating strip 18 is preferably of about the same thickness as each of the channel members. The insulating strip 18 is preferably arranged with its outer and inner edges substantially flush with the corresponding edges of the narrow flanges 16 of the channel members. The spacing of the flanges 16 and 17 provides air pockets 23 in the channel members, which air pockets open inwardly and are in direct communication with the groove 20 in which the glazing strip 21 is positioned.

The above described construction results in a sash rail of exceptionally low heat conductivity between its inner and outer faces 24 and 25 respectively. The fastening screws 22—which form the only direct metallic connections between the interior and exterior channel members 14 and 15—terminate short of the exposed flanges 17 of the exterior channel member, within the moderating air space 23 of that channel member, with the result that the few metallic paths of conductivity present are so tortuous and so disposed as to be virtually inappreciable. The use of steel

in the channel members, as distinguished for instance from aluminum, serves further to improve the insulating qualities of the rail.

The conical heads of the fastening screws 22 may, if desired, be seated in small conical insulating gaskets 26 placed in the countersunk screw apertures present in the flange 17 of the interior channel member 14, as shown in Fig. 4.

The corners of the sash can be finished off in any suitable manner; preferably with all of the interior channel members 14 rigidly connected together at their ends, all of the exterior channel members 15 similarly connected together, and all of the insulating strips 18 mitered or otherwise cut at their ends for right angular abutment with each other. The glazing strip 21 is preferably continuous, being stretched like a rubber band about the edges of the panes. If desired, the insulating air spaces 23 between the flanges 16 and 17 may be filled with some additional insulating material of any suitable character, but this is not at all necessary as the air in such spaces provides good insulation.

I claim:

1. In a multiple glass sash, a frame characterized by a single inwardly opening glazing groove for the reception of two or more panes of glass, said frame comprising a pair of laterally spaced metal channel members, each of which members opens inwardly toward the glazing area of the sash and is provided at the side adjacent the other member with a relatively narrow inwardly directed flange and at the side farthest removed from the other member with a relatively wide inwardly directed flange, a non-metallic insulating strip positioned between the channel members in engagement with the narrow flanges of the latter, the inwardly projecting portions of the wide flanges of the channel members forming between the same the aforesaid single inwardly opening glazing groove for the reception of two or more panes of glass, a resiliently compressible glazing means positioned in said groove, two or more panes of glass mounted in and separated by the glazing means, and means for clamping the channel members against the insulating means, with the glazing means resiliently compressed between the inwardly projecting portions of the wide flanges by the action of said clamping means.

2. In a multiple glass sash, a frame characterized by a single inwardly opening glazing groove for the reception of two or more panes of glass, said frame comprising a pair of laterally spaced metal channel members, each of which members opens inwardly toward the glazing area of the sash and is provided at the side adjacent the other member with a relatively narrow inwardly directed flange and at the side farthest removed from the other member with a relatively wide inwardly directed flange, a non-metallic insulating strip positioned between the channel members in engagement with the narrow flanges of the latter, the inwardly projecting portions of the wide flanges of the channel members forming between the same the aforesaid single inwardly opening glazing groove for the reception of two or more panes of glass, a resiliently compressible glazing strip positioned in said groove, two or more panes of glass mounted in and separated by the glazing strip, and means for clamping the channel members against the insulating strip, with the glazing strip resiliently compressed between the inwardly projecting portions of the wide flanges by the action of said clamping means,

said channel members being of approximately the same over-all thickness, and said insulating strip being of approximately the same thickness as each of the channel members and being arranged with its outer and inner edges substantially flush with the corresponding edges of the narrow flanges of the channel members.

3. In a multiple glass sash, a frame characterized by a single inwardly opening glazing groove for the reception of two or more panes of glass, said frame comprising a pair of laterally spaced metal channel members, each of which members opens inwardly toward the glazing area of the sash and is provided at the side adjacent the other member with a relatively narrow inwardly directed flange and at the side farthest removed from the other member with a relatively wide inwardly directed flange, a non-metallic insulating strip positioned between the channel members in engagement with the narrow flanges of the latter, the inwardly projecting portions of the wide flanges of the channel members forming between the same the aforesaid single inwardly opening glazing groove for the reception of two or more panes of glass, which groove is located inwardly of the narrow flanges and insulating strip in communication with the spaces present between the narrow and wide flanges, a resiliently compressible glazing strip positioned in said groove, two or more panes of glass mounted in and separated by the glazing strip, and means for clamping the channel members against the insulating strip, with the glazing strip resiliently compressed between the inwardly projecting portions of the wide flanges by the action of said clamping means.

4. In a multiple glass sash, a frame characterized by a single inwardly opening glazing groove for the reception of two or more panes of glass, said frame comprising a pair of laterally spaced metal channel members, each of which members opens inwardly toward the glazing area of the sash and is provided at the side adjacent the other member with a relatively narrow inwardly directed flange and at the side farthest removed from the other member with a relatively wide inwardly directed flange, a non-metallic insulating strip positioned between the channel members in engagement with the narrow flanges of the latter, the inwardly projecting portions of the wide flanges of the channel members forming between the same the aforesaid single inwardly opening glazing groove for the reception of two or more panes of glass, a resiliently compressible glazing strip positioned in said groove, two or more panes of glass mounted in and separated by the glazing strip, and means for clamping the channel members against the insulating strip, with the glazing strip resiliently compressed between the inwardly projecting portions of the wide flanges by the action of said clamping means, said clamping means acting directly against the wide flange on one channel member and the narrow flange on the other channel member.

5. In a multiple glass sash, a frame characterized by a single inwardly opening glazing groove for the reception of two or more panes of glass, said frame comprising a pair of laterally spaced metal channel members, each of which members opens inwardly toward the glazing area of the sash and is provided at the side adjacent the other member with a relatively narrow inwardly directed flange and at the side farthest removed from the other member with a relatively wide inwardly directed flange, a non-metallic in-

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insulating strip positioned between the channel members in engagement with the narrow flanges of the latter, the inwardly projecting portions of the wide flanges of the channel members forming between the same the aforesaid single inwardly opening glazing groove for the reception of two or more panes of glass, a resiliently compressible glazing strip positioned in said groove, two or more panes of glass mounted in and separated by the glazing strip, and means for clamping the channel members against the insulating strip, with the glazing strip resiliently compressed between the inwardly projecting portions of the wide flanges by the action of said clamping means, said clamping means acting directly against the wide flange on one channel member and the narrow flange on the other channel member, said clamping means consisting of screws which pass through both flanges of one channel member and the insulating strip and are threaded into the narrow flange of the other channel member.

6. In a multiple glass sash, a pair of complementary metal rail members, each of which is shaped to provide a longitudinally extending air space which opens inwardly toward the glazing area of the sash, a non-metallic insulating strip positioned between the rail members opposite the air spaces therein, said rail members having

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inwardly extending portions which form between the same inwardly of the insulating strip a single glazing groove in open communication with the air spaces, resiliently compressible glazing means within the groove, two or more panes of glass mounted in and separated by the glazing means, and means for clamping the rail members against the insulating strip, with the glazing means resiliently compressed between the inwardly extending portions of said rail members.

7. In a self-contained multiple glass sash for insertion as a unit in a window opening, a pair of one-piece complementary metal rail members, at least one of which is shaped in the form of an integral channel to provide a longitudinally extending air space which opens inwardly toward the glazing area of the sash, a non-metallic insulating strip positioned between the rail members opposite said air space, said rail members having inwardly extending portions which form between the same inwardly of the insulating strip a single glazing groove in open communication with the air space, resiliently compressible glazing means within the groove, two or more panes of glass mounted in and separated by the glazing means, and means for clamping the rail members against the insulating strip.

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