July 25, 1961 F. X. LEISIBACH 2,993,242

DOUBLE-GLAZED ASSEMBLIES FOR WINDOWS AND DOORS

Filed Jan. 20, 1958 2 Sheets-Sheet 1

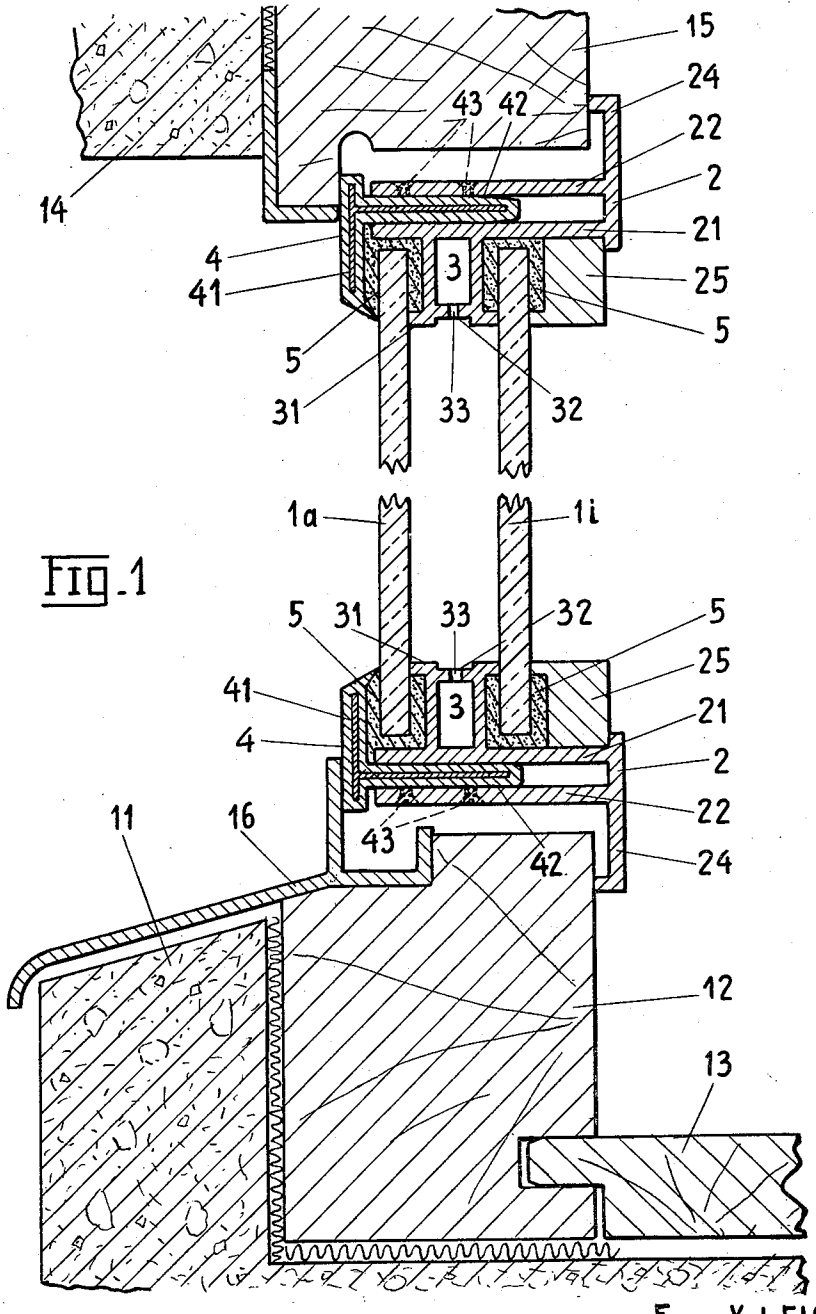


FIG. 1

Franz X. LEISIBACH
INVENTOR

By Wenderoth, Lind & Ponack
Attys

July 25, 1961 F. X. LEISIBACH 2,993,242

DOUBLE-GLAZED ASSEMBLIES FOR WINDOWS AND DOORS

Filed Jan. 20, 1958 2 Sheets-Sheet 2

Fig. 2

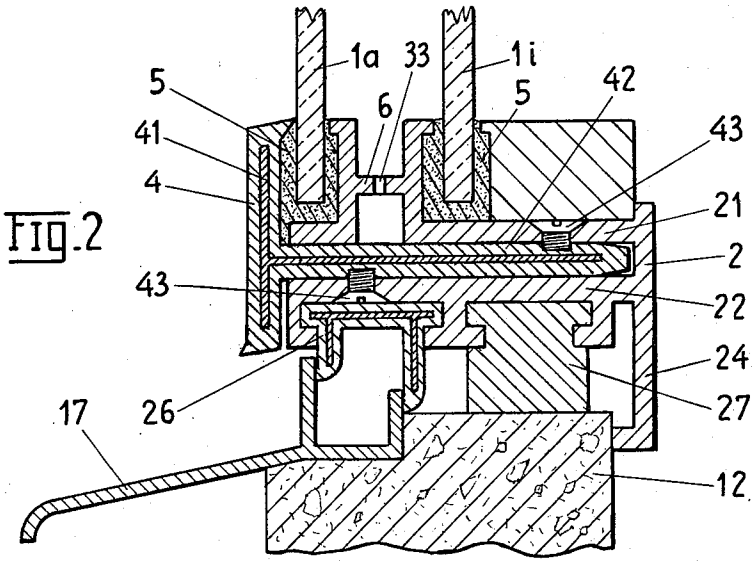


Fig. 3

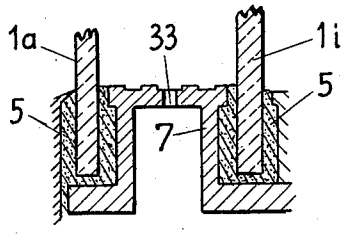


Fig. 4

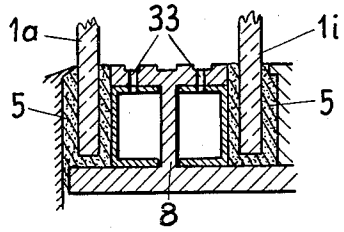
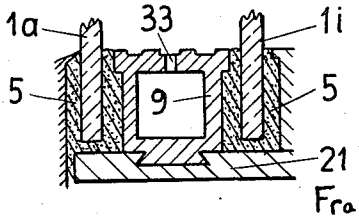


Fig. 5



Franz X. LEISIBACH
INVENTOR

By: Wenderoth, Lind & Ponack
Attys

United States Patent Office 2,993,242 Patented July 25, 1961

2,993,242

DOUBLE-GLAZED ASSEMBLIES FOR WINDOWS AND DOORS

Franz Xaver Leisibach, Kastanienbaum, Lucerne, Switzerland, assignor to Firma Aluco-Bauelemente-Patentgesellschaft, Lucerne, Switzerland

Filed Jan. 20, 1958, Ser. No. 710,005
Claims priority, application Switzerland Jan. 24, 1957
3 Claims. (Cl. 20—56.5)

The present invention relates to double-glazed assemblies for windows and doors, and has the primary object of providing an assembly of this kind which thermally insulates the interior well from the outside atmosphere, and is impermeable to rain, snow and wind.

It is another object of the invention to provide an assembly of the kind referred to, which is free from condensation between the double glazing.

It is yet another object of the invention to provide an assembly of the kind referred to which is free from mirror reflection effects.

With these and other objects in view I provide a double-glazed assembly for windows and doors, comprising in combination: a frame, an outer glass pane, an inner glass pane and intermediate profile rails, the said frame containing U-profile metal rails having legs facing outwardly and a spacer web fixedly attached to the leg adjacent to the said outer and inner panes and between the edges thereof, the said intermediate profile rails being of T-profile having a web and a flange, and having a coating of thermally insulating material, inserted with the said web of the said T-profiles into the gap between the said legs of the said U-profile rails, and the flange of the said T-profiles forming an abutment for the said outer pane.

These and other features and objects of my said invention will be clearly understood from the following description of an embodiment and several modifications thereof, given by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a section, partly broken away of a double-glazed window according to the present invention,

FIG. 2 is a part-section of a modification thereof,

FIGS. 3, 4 and 5 each show a modification of the spacer web arranged between the outer and inner pane.

In FIG. 1 the lower outer window sill is denoted **11**, the lower frame carrier timber **12**, and the inner window sill **13** of the embodiment of a window. The upper window lintel is denoted **14** and the upper frame carrier timber **15**. A drip plate attached to the outside of the lower frame carrier timber is denoted **16**.

The metal frame rails for the two window panes **1***a* and **1***i* are denoted **2** as a whole.

The same are designed in principle as of U-profile shape, each groove slot between the legs **21** and **22** thereof being open outwardly, a spacer web being provided on the legs **21** facing towards the panes and firmly connected mechanically therewith between the panes **1***a* and **1***i*. According to FIG. 1 this spacer web has the shape of a single-piece square tube **3** projecting from the associated leg which tubes are provided with protruding flanks **31** and on the top surfaces with longitudinal grooves **32** which latter have the objejct of preventing phenomenon of mirror reflection.

The square tubes **3** may be provided on the top surfaces with holes or slots **33**, so that the air trapped between the panes **1***a* and **1***i* may be dried by means of hydrophilous material placed in the square tube.

On the side of the interior of the room the frame rails **2** carry abutment plates **24** directed towards the frame carrier timbers **12** and **15**, respectively.

The inner pane **1***i* is pressed according to FIG. 1 by

a cover rail **25** against the inner flank of the spacer tube **3**.

The outer pane **1***a* is pressed by the inside of the transverse leg **41** of a T-profile bar **4**, enveloped with insulating synthetic material, against the outer flank of the spacer tube **3**, the longitudinal leg **42** thereof being inserted into the gap between the two legs **21** and **22** of the frame, and secured there by the aid of screws **43**. The mass of putty between the panes and the components clamping the same fast is denoted by reference numeral **5**.

The whole glazing assembly including the frame rails **2** and the panes **1***a* and **1***i* is completely pre-assembled and is inserted as a whole between the frame carrier timbers **12**, **15** and fixed therein.

There does not exist any sort of heat conductive metal bridge between the components impinged upon by the ambient atmosphere outside and the components exposed to the air of the interior, which fact offers great advantages as compared with the known designs.

In the modification according to FIG. 2 all components corresponding to those of FIG. 1 are denoted by the same reference characters.

Differences exist only as regards the formation of the spacer web, which here has an H-profile **6**, as well as in that the outside of the frame profile leg **22** facing towards the frame carrier **12** is provided with profile grooves for the insertion of profiled abutment rails **26** and **27**, respectively.

The abutment rail **26** provides a support connection between the drip plate **17** and the frame rail, and for the prevention of heat conduction it is designed as a profile rail enveloped with insulating synthetic material.

According to the embodiment of FIG. 3 the spacer web **7** has an inverted U-shaped profile, according to FIG. 4, a T-profile shape **8**, while according to FIG. 5 the frame leg **21** comprises grooves for the insertion of the dove tail ridge of a rectangular profile tube **9**.

While I have described herein and illustrated in the accompanying drawings what may be considered typical and particularly useful embodiments of my said invention, I wish it to be understood that I do not limit myself to the particular details and dimensions described and illustrated, for obvious modifications will occur to a person skilled in the art.

What I claim as my invention and desire to secure by Letters Patent, is:

1. A frame construction for a double glazed window consisting essentially of a frame member having a U-shaped cross section with the legs of the U projecting transversely to the plane of the frame, a spacer member on the leg which is innermost in the frame, said spacer member projecting into the space defined by the frame, said spacer member having grooves therein on the surfaces thereof parallel to the plane of the frame, a first covering strip removably mounted on said leg and having a groove in the face thereof opposed to said spacer tube, and a second T-shaped covering strip of insulating material positioned between the legs of the U and having a portion of the cross member of the T extending into the area defined by the frame, said portion having a groove in the surface thereof opposed to said spacer member, whereby a pane of glass may be mounted between said portion and said spacer member and a pane of glass may be mounted between said spacer member and said first covering strip and said grooves form space for elastic mounting and sealing material.

2. A frame construction as claimed in claim 1 in which said T-shaped covering strip is a metal strip having a T-shaped cross section and which is covered with an insulating material.

3. A frame construction as claimed in claim 1 in which

said innermost leg of said frame member has an abutment on the end thereof on which said first covering strip is mounted, said covering strip being between said abutment and said spacer member and abutting said abutment.

References Cited in the file of this patent

UNITED STATES PATENTS

2,084,103	Miller	June 15, 1937
2,088,738	Fox	Aug. 3, 1937
2,128,870	Woelfel	Aug. 30, 1938
2,129,072	Rutishauser	Sept. 6, 1938
2,157,425	Nelson	May 9, 1939
2,167,772	Owen	Aug. 1, 1939
2,169,713	Stroud	Aug. 15, 1939
2,235,681	Haven et al.	Mar. 18, 1941
2,266,387	Woelfel	Dec. 16, 1941
2,332,060	Colleran	Oct. 16, 1943
2,723,427	Bobel	Nov. 15, 1955
2,883,718	Persson	Apr. 28, 1959

FOREIGN PATENTS

515,085	Great Britain	Nov. 24, 1939
511,699	Belgium	June 14, 1952
310,183	Switzerland	Dec. 16, 1955