

[54] **WINDOW FITTING**

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 [51] Int. Cl. ....E05d 7/00  
 [58] Field of Search .....49/402, 488, 485; 52/202

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[57] **ABSTRACT**

A window fitting consisting of a metal frame attached to the wall and a metal sash with at least two glass panes attached to the frame, the sash being fitted inside the frame so that the opening of the sash is mainly congruent with the opening of the frame and with a heat insulating gasket fitted between the frame and the sash around the entire opening.

**4 Claims, 2 Drawing Figures**

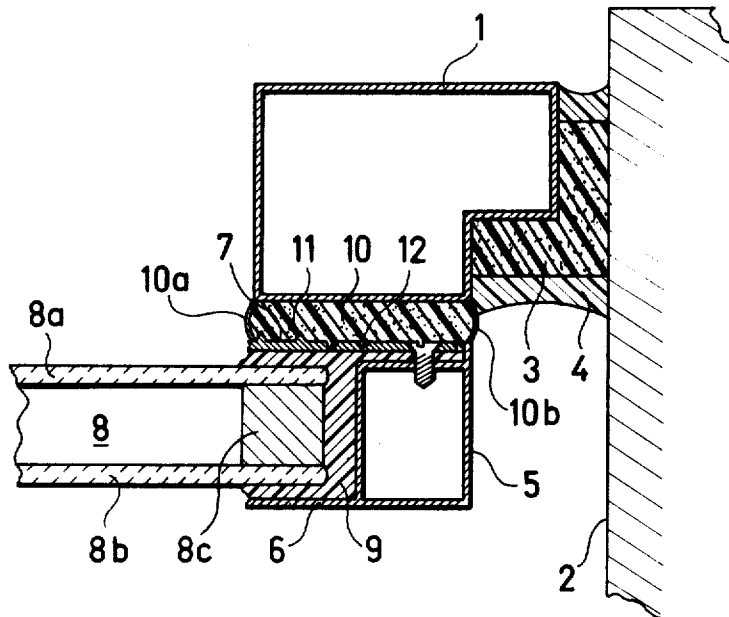


FIG. 1

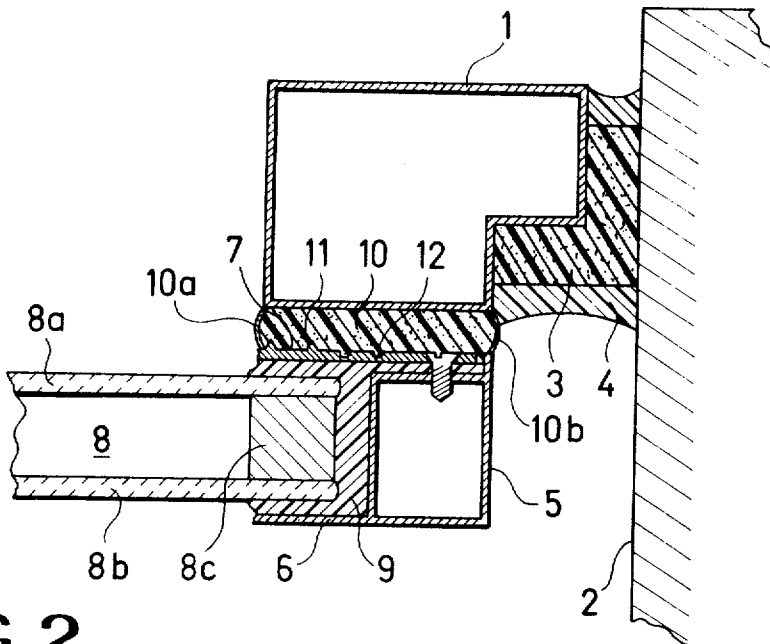
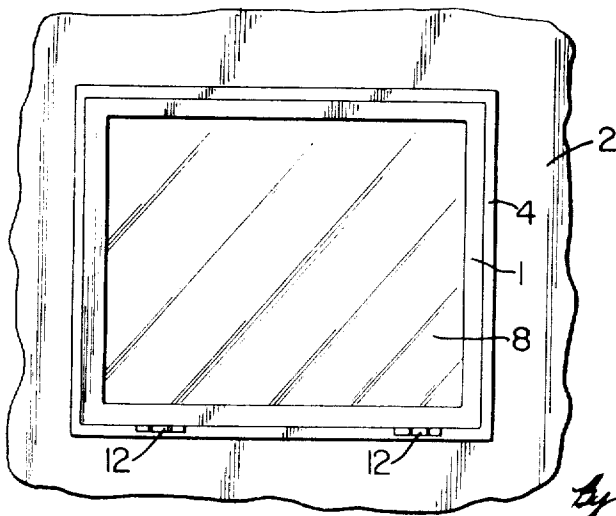


FIG. 2



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## WINDOW FITTING

## BACKGROUND OF THE INVENTION

## 1. Field of the Invention

This invention relates generally to metal frame windows with metal sashes having two or more panes and to arrangements preventing the heat conducting of the frames and sashes from the warm side to the cold side of the window.

## 2. Description of the Prior Art

Swiss Pat. No. 315 523 introduces a window structure with one glass pane. The sash is fitted inside the frame and these two attached to the wall so that the opening in the wall for admission of light is not reduced by them. However, this construction provides no insulation between the sash and the open air, so that cold air can have an effect on the sash both directly and through the frame. There are, in fact, two narrow draft-preventive bands between the frame and the sash, but their purpose is only to prevent draft through the cracks. In a window with a wooden sash, the sash and frame themselves form a relatively good insulation against the open air, and special insulation is therefore not necessary. However, in a window with a metal sash and frame, the so-called cold conductors create a difficult problem and can even cause breakage of the glass pane due to the great differences of temperature in the edge area, as well as condensation of air humidity on the glass pane.

## SUMMARY OF THE INVENTION

In accordance with this invention a window fitting, including a metal frame attached to the wall and a metal sash with at least two glass panes attached to the frame so that the opening of the frame is essentially congruent with the opening of the sash, is provided with a heat insulating gasket being fitted between the frame and the sash around the entire opening. By this arrangement the cold conductor problem discussed above is eliminated.

According to the invention, the windowpane may be a so-called insulating pane, in which at least two sheets of glass are permanently and hermetically fitted to the sash.

According to the invention, the insulating gasket is made of closed-cell foam rubber, foam plastic, wood, or other such material. Those edges of the gasket which remain bare when the window is closed can be advantageously covered with a water- and airtight material.

According to a very advantageous application of the invention, the surface of the sash facing the frame may be provided with ribs, tracks or the like that fit together with the insulating gaskets, in order to make the insulation more effective.

As already pointed out the heat conductivity of the gasket between the glass sheets has been a disadvantage of the insulating pane. In a window according to this invention this heat conducting gasket is placed entirely inside the room, which eliminates the cold conducting by this gasket. Also the edges of the insulating pane, which have proven somewhat sensitive to cold and may therefore be broken will be inside at an even temperature in a window according to this invention, in which case the disadvantage mentioned above does not occur.

Fully independent of the use of insulating panes, a window according to this invention is advantageous compared with previously known window structures in that the entire cold frame remains outside, and that there is an insulating gasket between the frame and the sash. Thus the cold conductors between the frame and the sash are effectively cut, and there is contact leading from the frame to the sash only at the hinges and the bolt or bolts. Another advantage of a window according to this invention is that the fastening of the panes can take place in the factory manufacturing the sashes, where the work will be done more carefully than if it were done at the place of construction.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 shows a horizontal section through one of the sides of the window fitting.

FIG. 2 shows an elevational view of the window fitting in a wall.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the figure, which shows a cross-cut through the frame and the sash, the frame is indicated by 1 and is in the described case made of profile tubing and fitted to the wall 2 so that, in a previously known manner, insulating material 3, for example cell plastic, and water- and airtight sealing material 4 is placed between the frame and the wall. The sash is fitted inside the frame 1 and consists of a framework 5 made of profile tubing and glass-holding flanges 6 and 7 standing out from it and between which the windowpanes are fastened and sealed with suitable putty 9. In this example, the flange 6 is presented as a part of the framework, while the flange 7 is attached to the framework with screws. It is, however, clear that the form of both the sash and the frame can deviate in many ways from this example and that they can be made of both steel profile and light metal profile. According to the invention, an insulation gasket 10 is fitted around the entire frame between the frame 1 and the sash 5. This gasket is made of some insulating material like closed-cell foam rubber, foam plastic, or wood. Those sides of this gasket which remain bare when the window is closed, particularly the side facing the outside, are advantageously covered with a water- and airtight material as is shown at 10a and 10b. Furthermore, the glass-holding flange 7 facing the insulating gasket 10 may have protruding parts that run around the sash, like ribs 11, or indentations, such as tracks 12, the purpose of which is to make the insulation more effective. The glass-holding flange 7 at the lower part of the sash may be provided with an outward-turned dropper to conduct water away. This kind of solution is not presented in the figure.

In the example, the windowpanes have been thought to be so-called insulating panes. In this case two sheets of glass 8a, 8b have been permanently and airtightly fastened to either side of the gasket between them 8c. This kind of insulating pane is rather heavy and therefore requires a sturdy sash and hinges. For this reason insulating panes have been used mainly fitted directly and immovably to the frame. This kind of use is, however, limited to houses that are so low that the windows can be cleaned from the outside, or in apartment houses to windows with balconies behind them. When a window according to the invention is provided with hinges at the lower edge, it is easy to open it for cleaning, and the sash need not be as sturdy as it would have to be if the hinges were on the side.

What is claimed is:

1. A heat insulating window fitting for a building wall comprising:
  - a metal frame mounted to the building wall;
  - a metal sash mounted in relation to said frame sash that the opening of said frame is essentially congruent with the opening of said sash;
  - said metal sash comprising a framework, a first glass-holding flange standing out from said framework on the side of said sash closest to said frame and connected to said framework by a fastener and a second glass-holding flange standing out from said framework on the opposite side of said sash;
  - at least two glass panes held in position between said flanges by glass-holding material, which material is also sandwiched between said first flange and said sash framework;
  - said sash having protuberances and indentations encircling said sash on the surface of said first flange which faces said frame; and
  - a heat insulating gasket tightly fastened to said frame between those surfaces of said frame and said sash which abut one another such that when said sash is closed, said protuberances and said indentations on said first flange serve to ensure an effective insulation whereby heat conduction from the warm side of the window to the cold side thereof is prevented.

2. Fitting according to claim 1, wherein said heat insulating gasket is composed of a foamy closed-cell material.

3. Fitting according to claim 1, wherein at least the exposed surface of said insulating gasket, facing the outside, is covered by a water- and airtight material.

4. Fitting according to claim 1, wherein said sash is attached to said frame with hinges at the lower edge.

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