

UNITED STATES PATENT OFFICE

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METALLIC SASH

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This invention relates to metallic frames, particularly to metallic frames for window sashes. The principal objection to such metallic sash frames is that, in cold weather, the frames become very cold due to the high thermal conductivity of the metal, thereby causing the roomside of the frames to "sweat" or become coated with frost when the warm air in the room is cooled upon contact with the cold frames; and considerable damage takes place when the water runs down on the sills and walls. Another objection is that additional fuel is required to overcome the heat loss from the room through the metal sash frames. The principal object of the present invention is to produce a metallic sash frame of low thermal conductivity which will prevent the loss of heat through the frame and condensation of moisture on roomside thereof. Other objects are simplicity and cheapness of construction, ease of assembly, and compactness of design. The invention consists in a built up metallic frame whose parts are separated from each other by material of low thermal conductivity. The invention also consists in the construction, combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is an elevation, partly in section, of an insulated metallic window sash embodying my invention,

Fig. 2 is a cross-section on the line 2—2 of Fig. 1,

Fig. 3 is a cross-section on the line 3—3 of Fig. 1,

Fig. 4 is a similar section showing a modified construction of frame; and

Fig. 5 is a view showing the parts of the frame shown in Fig. 4 before assembly.

Referring to Figs. 1 to 3, inclusive, of the accompanying drawings, my invention is shown in connection with a metallic window sash frame which comprises a continuous, one-piece tubular main frame A made of a length of seamless steel tubing, which is bent to the desired shape and has its ends disposed

in abutting relation and welded together to form said main frame. If desired, the tubular main frame or core of the sash may be made of separate lengths of tubing with their adjacent ends mitred or welded together at the corners of the frame. As shown in the drawings, the tubing is of a cross-sectional shape, preferably circular, well adapted to resist forces which tend to cause winding or twisting of the frame.

The tubular main frame is covered by or encased within a metallic ornamental and protective outside frame or casing B, which serves also as a seat for the sash pane C. For purposes of assembly and removal, the outside frame or casing B comprises inside and outside frame sections 1 and 2, respectively, of substantially channel-shaped cross-section. The inside frame section 1 straddles the tubular main frame A; and the outside frame section 2 straddles the inside frame section 1 and the tubular main frame A straddled thereby. The two frame sections are secured together at regularly spaced intervals preferably by means of rivets 3 that pass through the overlapped side flanges of the channel-shaped inside and outside frame sections 1 and 2 of the outside casing B and the tubular main frame A. The outside frame section 2 has its web extended to form an edge flange 4 adapted to cooperate with the window frame. The inside frame section 1 has its web extended to form an edge flange 5 which serves as a backing flange for the sash pane C, which, in accordance with common practice, is held in position by means of putty 6.

In order to prevent heat transference by conduction through the metallic sash frame, the main frame A and the inside and outside frame sections 1 and 2, respectively, of the outside frame or casing B are separated or spaced from each other by means of strips 7 and 8, respectively, of felt or other material having a low thermal conductivity. The felt strip 7 is interposed between the tubular main frame A and the channel of the inside frame section 1 of the outside casing or frame B and is held therein preferably by pinching or bending the side flanges of

the channel inwardly at intervals, as at 9, over said tubular main frame. This inward pinching or crimping of the side flanges of the channel-shaped inside frame section 1 also serves to retain the tubular main frame A therein. The other felt strip 8 is seated in the channel of the outside frame section 2 of the outside frame or casing B and serves to separate the web of the channel of said section from the tubular core and the side flanges of the channel from the side flanges of the inside frame section 1 of said casing. The inner margin of the felt strip 8 projects inwardly beyond the inner side flange of the outside frame section of the outside casing B along the flange 5 and forms a flexible or cushioned backing for the sash pane C.

In the modified construction shown in Figs. 4 and 5 the main frame A' of the sash frame is in the form of a solid bar that is provided along its opposite sides with longitudinally extending grooves 10. The outside frame or casing B', within which said bar is encased comprises inside and outside frame sections 1a and 2a, respectively, that are provided with side flanges 11 adapted to seat within said grooves. The two frame sections 1a and 2a, respectively, of the outside frame or casing B' are insulated from each other and from the main frame A' by means of strips of felt interposed between the parts. The two frame sections of the outside casing B' are held in position about the main frame member A', without the use of rivets, by bending their side flanges 11 inwardly far enough to seat within the grooves 10 provided therefor in said main frame member and thus bring about an interlocking engagement of the main frame and casing.

The hereinbefore described arrangement provides a neat, lightweight metallic sash that is strong and rigid enough to resist any strains tending to distort the frame; it also prevents the flow of heat from the side of the sash having the higher temperature to the side having the lower temperature and thereby prevents loss of heat through the sash frame and precipitation of moisture on the roomside of the sash frame; and it also permits the metallic frame members and the insulating strips therefor to be readily assembled to form the frame.

Obviously, the invention is not restricted to sash frames; but is applicable to other metallic frames and constructions wherein it is desirable to prevent loss of heat through the metallic frame.

What I claim is:

1. A metallic framing member comprising an inside member and a sectional casing member therefor, and a suitable heat insulating material separating the sections of said

sectional casing member from each other and from said inside member.

2. A metallic frame comprising a main frame and a sectional casing frame therefor, and heat insulating material separating the sections of said casing frame from each other and from said tubular main frame.

3. A metallic sash frame comprising room side and outside frame sections of substantially channel-shaped cross-section fitting one within the other and heat insulating material separating said sections.

4. A metallic sash comprising a main frame member and a casing frame therefor, said casing frame comprising inside and outside frame sections, and heat insulating material for separating said frame sections from each other and said main frame.

5. A metallic sash comprising a main frame and a casing frame, said casing frame comprising two frame sections of substantially channel-shaped cross-section, said channel-shaped frame sections fitting one within the other with the main frame interposed therebetween, and heat insulating material for separating said channel-shaped frame sections from each other and from said main frame.

6. A metallic member comprising an inside member, a frame casing therefor, said main casing comprising two sections of substantially channel-shaped cross-section, said channel-shaped casing sections fitting one within the other with the inside member interposed therebetween, and heat insulating material for separating said channel-shaped frame casing sections from each other and from said inside member.

7. A metallic sash comprising a main frame and a casing frame therefor, said casing frame comprising inside and outside frame sections of substantially channel-shaped cross-section, the inside frame section straddling the main frame and the outside frame section straddling the inside frame section, and heat insulating material for separating said channel-shaped frame sections from each other and from said main frame.

8. A metallic sash comprising a main frame and a casing frame therefor, said casing frame comprising inside and outside frame sections of substantially channel-shaped cross-section, the inside frame section straddling the main frame and the outside frame section straddling the inside frame section, heat insulating material for separating said channel shaped frame section from each other and from said main frame, and means for securing the parts together.

9. A metallic sash comprising a main frame of circular cross-section and a casing frame therefor comprising inside and outside frame sections of substantially channel-shaped cross-section, the inside frame sec-

tion straddling the main frame, a strip of heat insulating material interposed between said inside frame section and said main frame, and means for securing said inside frame section and said tubular frame together with the insulating material therebetween, said outside frame section straddling said inside frame section, a strip of heat insulating material interposed between said outside frame section and the main frame and the inside frame section, and means for securing the inside and outside frame sections together and to said main frame.

10. A metallic sash frame comprising a main frame and a casing therefor, said casing comprising two frame sections, and insulating material separating said frame sections from each other and said main frame, the frame sections having bendable portions adapted to be bent into interlocked engagement with said main frame.

Signed at St. Louis, Missouri, this 24th day of May, 1930.

ALFRED M. LANE.

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