Aug. 7, 1945. O. H. LIND 2,381,129

STORM SASH

Filed March 15, 1943 2 Sheets-Sheet 1

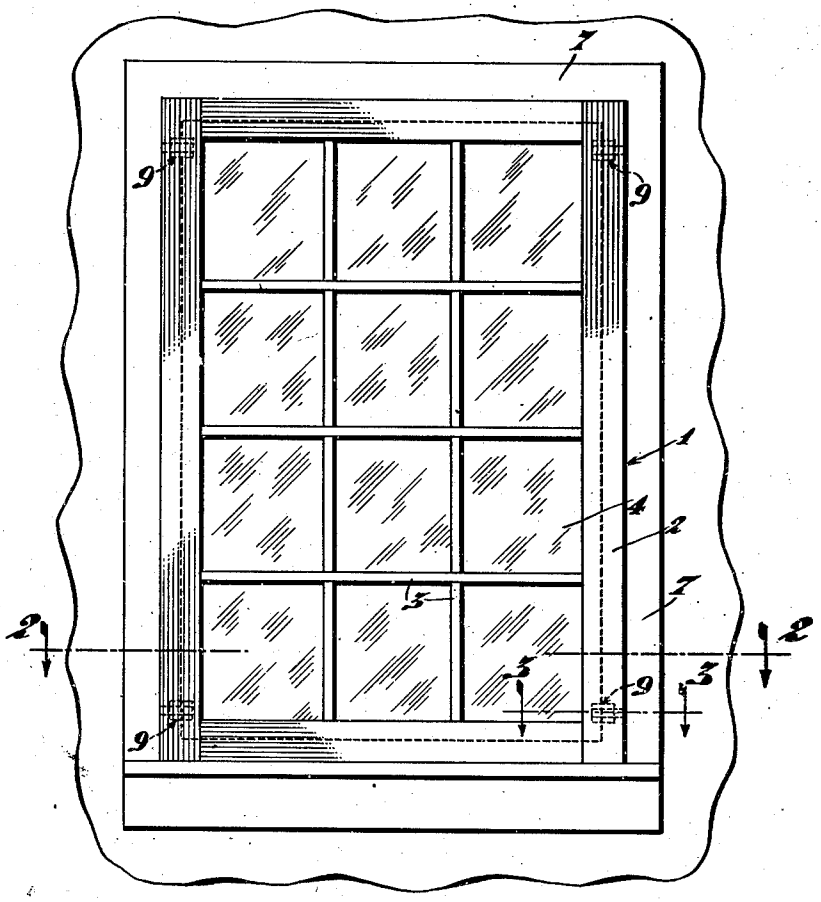

Fig. 1

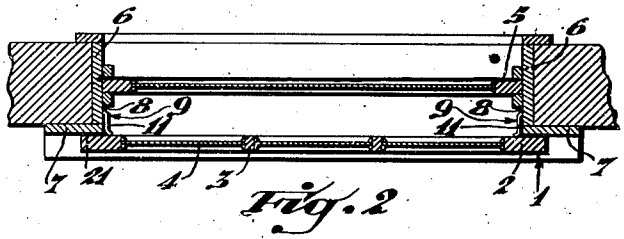

Fig. 2

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STORM SASH

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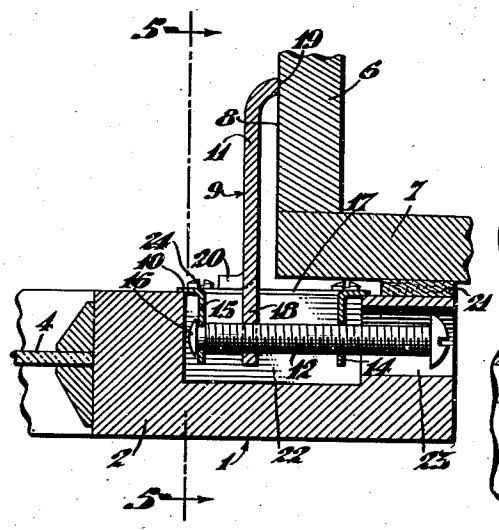

Fig. 3

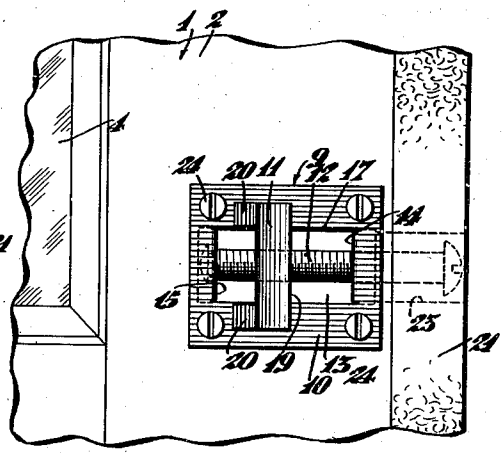

Fig. 4

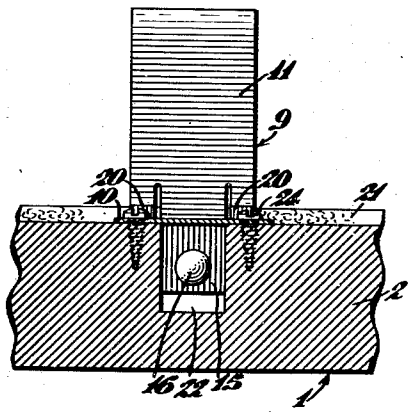

Fig. 5

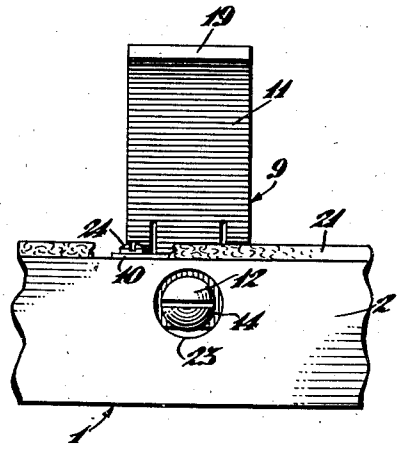

Fig. 6

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UNITED STATES PATENT OFFICE

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STORM SASH

Otto H. Lind, Cincinnati, Ohio

Application March 15, 1943, Serial No. 479,191

6 Claims. (Cl. 20—55)

This invention relates to storm sashes adapted to be placed over window openings for the purpose of preventing loss of heat from the building and the infiltration of cold air.

The usual storm sash is in effect a second window installed in the casing adjacent the regular window, fitted carefully and arranged to be removed during spring, summer and fall months when it is not needed. A so-called "dead" air space established between the storm sash and window proper provides insulating qualities against the loss of heat by conduction through the window glass but, unless the sash is fitted carefully or sealed around its edges, then cold air is free to circulate through the "dead" air space and its insulating value is impaired.

The fitting of the sash is dependent largely upon the care and skill of the carpenter who does the job. It is conventional, at present, for a householder who wishes to purchase storm sashes for his home, to have the millwork company measure the window openings, builds sashes accordingly but somewhat oversized, to allow for fitting, and then have a carpenter trim each individual storm sash on the jab. The procedure obviously is an expensive one, and the fact is that the cost of fitting is substantially or equally as great as the cost of the sashes supplied by the millwork company. For this reason not many homes can benefit from the lowered fuel consumption and greater comforts which the units are capable of providing.

The windows proper in a home or building usually are fitted carefully and the main heat loss through them usually is by conduction through the glass. To utilize the benefits of this snugness the present invention is based primarily upon the concept of installing storm sashes at the inside of the room instead of at the outside of the building. The window in its grooves or hangings therefor provides primary protection against air infiltration and the storm sash, on the other hand, located adjacent the window, provides with it a truly "dead" air space through which heat loss is minimized.

The present invention, however, further is based upon the concept of employing storm sashes at the inside of a room which in their over-all dimensions are sufficiently large to overlap the window frame area and form a seal with the casing at the overlapping portions using felt, rubber or other suitable gaskets, as the case may be, intermediate the overlapped portions of the storm sash and casing to exclude air passage. Inasmuch as windows are of relatively standard sizes this construction enables storm sash to be made by the millwork company on a production basis and avoids the careful fitting which the carpenter has heretofore been required to perform. The extent to which the storm sash overlaps the frame is not precisely critical because the seal is formed not at the edge of the sash as heretofore but at the meeting faces of the sash and casing.

In order to enable the sash to be installed or removed at will without the use of tools or special fittings the present invention further contemplates provision of clamp members on the sash which extend laterally from the face thereof for engagement with the face or faces of the window frame, that is, the faces which extend laterally to the wall of the room. These clamps are adjustable and, moved outwardly, engage the faces of the frame to hold it in position. Through this arrangement a storm window of a given size may be installed successfully over windows which differ in size from one another as much as two or more inches in either direction depending upon the range of adjustability of the clamping members. The millwork manufacturer, therefore, need not produce units "tailor made" for individual windows, but may produce a limited number of standard sizes, any one of which may be used satisfactorily in conjunction with windows within its size range.

In the preferred embodiment of the invention the clamp devices are simple units fastened to the sash in such manner that the clamp member extends beyond the face thereof to engage the window frame, with a screw or bolt head accessible from the exterior of the sash for adjusting the clamp to hold the sash in place. These clamps may be provided at both sides of the storm sash, or a stationary rail may be provided at one side for buttressing the sash against movement when it is clamped in place through clamping units positioned at the other side. In the alternative, the storm sash may rest conveniently upon the sill at its bottom edge and clamp units may be omitted entirely at the sides of the sash and located at the marginal portion adjacent the top edge.

When the sash is demounted from the window, it is removed in its entirety and there is then no hardware visible or other evidences of the installation of a supplemental unit on the window proper.

From the foregoing principles of the present invention and from the following detailed description of a preferred embodiment of it those

skilled in the art readily will comprehend the variations and modifications to which it is susceptible.

In the drawings:

Figure 1 is an elevation of a window equipped with a storm sash of the present invention looking at the window from the inside of the room.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is an enlarged sectional elevation showing a preferred form of a clamp unit of the present invention and its engagement with a window frame. This view is taken on line 3—3 of Figure 1.

Figure 4 is an elevation showing a clamp unit attached to the surface of the storm sash frame which faces the window.

Figure 5 is a sectional view taken on the line 5—5 of Figure 3.

Figure 6 is a view looking at the edge of the storm sash.

As shown in the drawings, the sash of the present invention is indicated generally at 1 and comprises a marginal frame 2 (divided by muntins 3, if desirable) for carrying lights or panes 4. This sash is used in conjunction with a window opening having a sash proper 5 which may be of the double hung casement, or hinged variety. The sash 5 is carried in a frame 6 which, at the inside of the room, is finished off with casing members 7 and a sill. The frame 6 provides surfaces 8 (Figure 3) at the top and at both sides, which extend laterally to the wall of the room. The sashes of the present invention, as just described, employ clamps for engaging one or all of these faces 8 to hold the sashes in place.

The preferred clamp units of the present invention, as shown best in Figures 3 to 6, are indicated generally at 9 and consist essentially of a base plate 10, a clamp 11, and an adjusting screw 12. The base plate 10 has a central opening 13 in it and brackets 14 and 15 extend laterally from the base plate at the respective endwise portions of the opening. The brackets 14 and 15 have bores in them which are in alignment with one another and the adjusting screw 12 passes freely through the bore in the bracket 14, while an endwise portion of the adjusting screw is counter-turned and journalled in the bracket 15, with the portion of the screw extending beyond the bracket 15 headed as at 16 to prevent the screw from moving axially when it is rotated.

For purposes of economy the brackets 14 and 15 are bent from the base plate 10 by severing the base plate along the lines 17 constituting the side edges of the central opening and also along a dividing line intermediate the endwise portions of the opening. The portions delineated by these sever lines are then bent to extend laterally from the base plate, thereby leaving the central opening 13 at the area they formerly occupied.

The clamp member 11 is a plate-like member having a shank portion 18 which passes through the base plate intermediate the sidewise edges 17 of its central opening. The shank has a threaded bore in it which is in engagement with the adjusting screw 12. The clamp extends laterally from the base plate at the other side and terminates in a clamping face 19 which preferably is parallel to but slightly offset from the plate or clamp leaf in order to provide good purchase of the clamp with the window casing 8. This face if desired may be surrounded by a rubber or fabric cushion to avoid marring the finish on the frame surface 8.

The main portion of the clamp, from the clamping surface 19 to the base plate is wider than the central opening or the shank 18, and runners 20—20 are bent laterally from it to ride along the face of the base plate and thereby prevent the clamp from tilting or canting when the face 19 of it is pressed against the casing.

The marginal portion of the storm sash which overlaps the window casing 7 at the inside of the room may, if desirable, for sealing purposes, be provided with a gasket 21 of felt or other suitable material.

As previously explained the amount of overlap may vary but, inwardly from the casing edge or framing surface 8, the sash has a mortise opening 22 cut into it which is sufficiently large to receive the brackets 14 and 15 yet sufficiently small to be covered by the base plate 10. A hole 23 is cut from the edge of the storm sash into the mortise opening to give access to the adjusting screw 12. Base plate 10 has holes at its corners and screws 24 pass through these holes and into the wood of the frame to fasten the clamp unit in place.

As previously explained, these clamp units may be provided at the margnial portions of the sash, for instance, one at each top and bottom corner, or they may, if desirable, be provided only along the top marginal portion to exert a clamping action against the top casing member when the bottom of the sash is supported by the sill.

Storm sashes of the present invention may be produced readily and economically; to install them the householder simply takes a screw driver or socket wrench, depending upon the heading of the adjusting screw 12, and adjusts the position of the clamp leaves 11 until they are spaced substantially equidistantly from the edges of the sash and inwardly enough to permit the leaves to enter the casing 8. Then the sash is placed over the window area, resting on the sill, and while it is held against the frame the clamp screws at one or both side are adjusted to bring the faces 19 of the clamps against the frame faces 8.

I desire to be limited only by the claims which follow.

Having described my invention, I claim:

1. The combination of a storm sash having a marginal frame and a pane therein and a clamp device attached to the sash at the marginal frame thereof, said clamp device including a clamping member extending laterally from one face of the sash and spaced inwardly from the marginal edge thereof, and a screw which is accessible from another surface of said sash for moving said clamping member.

2. A storm sash unit comprising a storm sash having a marginal frame and a window pane therein and clamping means positioned at the opposite sides of said frame, said clamping means comprising clamping members extending laterally from the sash frame for respective clamping engagement with opposite sidewise portions of a window frame, and screws extending into said frame and through said clamping members for moving said clamping members toward and away from the marginal edges of said storm sash.

3. A storm sash comprising a marginal frame having a window pane therein, a clamping device carried by said marginal frame adjacent an edge thereof and including a clamping member extending laterally from said frame for engagement with a member of a window frame when the bot-

tom of said storm sash is supported from a point adjacent the window sill, and means for operating said clamping member to move it into clamping engagement with said window frame comprising a screw extending into said sash from an edge thereof and into threaded engagement with said clamping member.

4. A storm sash comprising a marginal frame having a window pane therein, clamping members arranged respectively adjacent the opposite sidewise edges of said frame and spaced inwardly therefrom, said clamping units including clamping members which may be moved toward one another to fit within a window frame while the marginal portion of the sash overlaps said frame, and means for moving said clamping members away from one another to bring them into clamping engagement with said window frame to hold said storm sash on said frame comprising screws extending into said sash from the opposite sidewise edges of said frame and into respective threaded engagement with said clamping members.

5. A storm sash unit comprising a marginal frame having a window pane therein, a gasket extending marginally along at least the sidewise edges of said frame, clamping means carried by said marginal frame adjacent opposite edges thereof, said clamping means including clamping members extending laterally from a face of said frame beyond the surface of said gasket, said clamping means being movable toward one another to fit within the opening of a window frame with the sash overlapping the window frame and the gasket thereon abutting the window casing and having tail pieces which extend into said sash, and means for moving said clamping members away from one another and into engagement with said window frame to hold the sash in place upon it comprising screw members extending into said sash from opposite sidewise edges thereof and into threaded engagement with the tail pieces of said clamping members.

6. A storm sash unit adapted to fit over the interior trim of a window, said unit comprising a marginal frame and a window pane therein and clamping means located along at least one vertical portion of said marginal frame, said clamping means including a clamping member extending at substantially a right angle from one face of said vertical portion and means to move said clamping member in a direction substantially parallel to the plane of said face, whereby said storm sash is held in secure engagement with said trim without damage thereto.

OTTO H. LIND.