

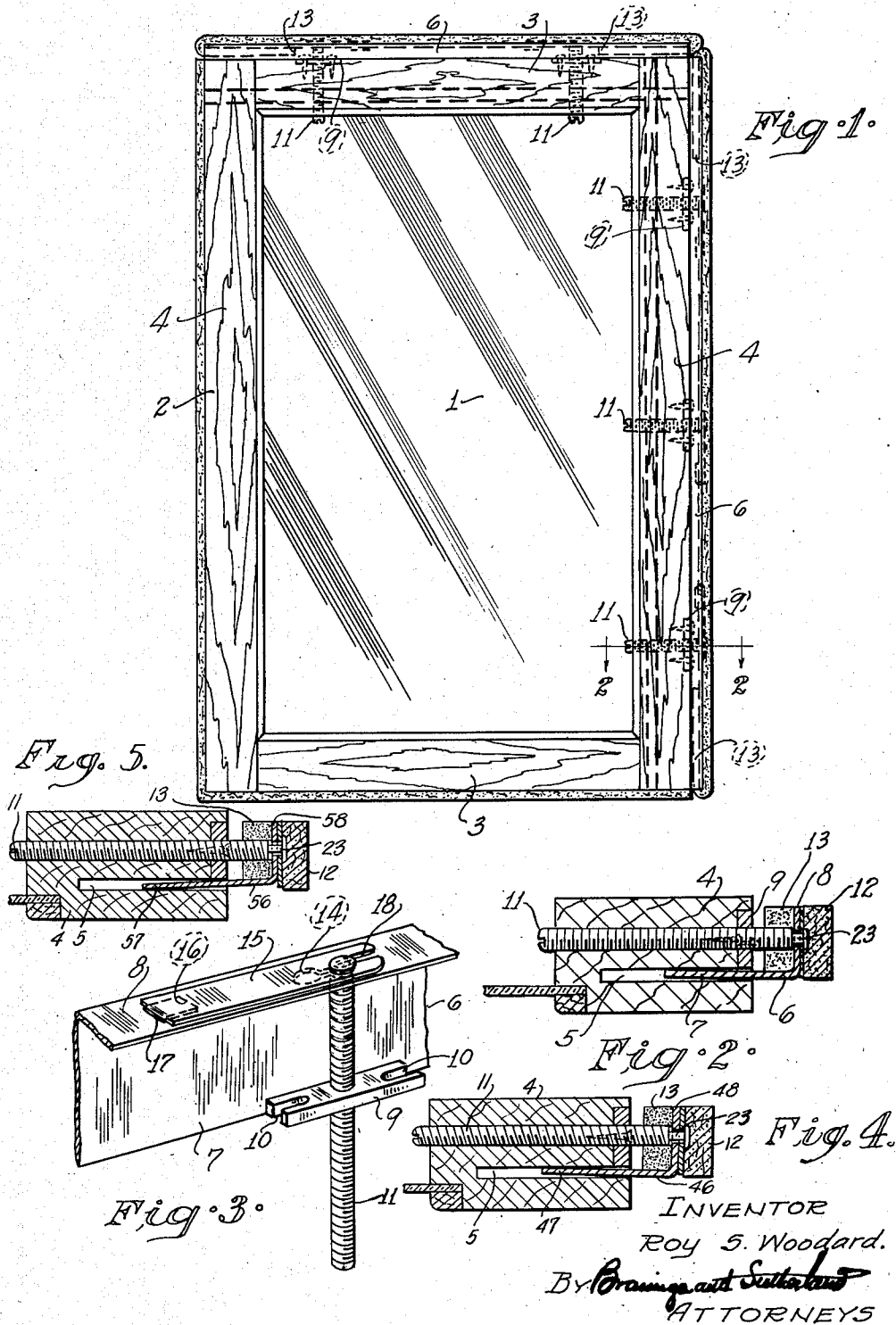
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STORM SASH

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STORM SASH

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This invention relates generally to storm sash and particularly to storm sash which are adjustable so as to snugly engage the frame of a window despite minor irregularities therein.

Storm sash are generally made to standard dimensions, as are ordinary window frames. In the case of such sizes of storm sash and window frames, as well as in cases where the window frame, and hence the storm sash, is of an unusual size or shape, it happens not infrequently that there are slight variations, as, for example, on the order of a half inch, in size or shape, which render it difficult to fit a storm sash so as to be weather-tight without doing considerable cutting and fitting on the job.

While many efforts have been made to produce a storm sash which permitted of slight adjustments in order to accommodate the aforesaid idiosyncrasies of window frames, such adjustable features have generally involved a sacrifice of weather-tightness.

The object of the present invention, generally stated, is to provide a storm sash capable of limited adjustment and withal substantially weather-tight.

Other objects of the invention will become apparent when the following description is read in connection with the accompanying drawings, in which:

Figure 1 is an elevational view of a storm sash embodying the adjustable features of the present invention;

Figure 2 is a sectional view taken along the line 2—2 of Figure 1; and

Figure 3 is a detailed perspective view of the adjusting mechanism.

Figure 4 is a view corresponding to Figure 2, but showing the parts with modified angular disposition.

Figure 5 is a view corresponding to Figures 2 and 4, but showing a further modification of the angular disposition of the parts.

In accordance with the present invention, generally stated, an end and a side of the frame of a storm sash are kerfed in the outside edges thereof so that the side walls of the kerf are substantially parallel with the plane of the pane within the frame. Into the kerf is fitted a thin, elongated sheet metal web, which is arranged for relative in-and-out adjustment within the kerf. The kerf is relatively narrow, but quite deep, and extends for the full length of at least one side and preferably one end of the storm sash. The fitting of the web within the kerf is such that, while the web is fairly free to move relative to the kerf, the joint is nonetheless substantially weather-tight. On the outer end of the web is a head portion arranged to receive a strip of cushion material, such as felt, and means is provided for forcing the head with its adjunct cushion against

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the permanent frame of a window and locking the same in that position.

Referring now to the drawings for an illustrative embodiment of the invention, the storm sash consists of a pane 1 enclosed within a main frame 2, which latter consists of horizontal or end members 3 and vertical or side members 4. In the embodiment shown, one of the end members 3 and one of the side members 4 is provided with a relatively deep, narrow kerf 5 in its exterior marginal edge. A strip of metal 6 having a thin, elongated web 7 and a head 8 is arranged with the web 7 in the kerf 5. In the embodiment shown, the thickness of the web 7 is on the order of $\frac{1}{8}$ inch, while the width of the kerf 5 is on the order of $\frac{3}{16}$ inch. Such a fitting of the web in the kerf enables the ready in-and-out movement of the web within the kerf, but at the same time substantially weather-proofs the connection between such members, particularly when the web is canted within the kerf, as will be described in more detail hereinafter.

An internally threaded member 9 is connected to the kerfed frame member by means of screws or nails positioned in apertures which provide for some freedom of movement of the member 9 in the plane of the outside edge of frame member 4, but the member 9 is so connected as to reduce to the minimum the possibility of relative movement in a direction normal to the plane of such exterior edge. Such enlarged apertures may take the form of holes larger than the screw or nail penetrating the same, but in the embodiment shown take the form of open-ended slots 10.

An adjusting screw 11 is in threaded engagement with member 9 and the outer end of the screw is swiveled to head 8 of strip 6 in any suitable way so as to provide for the transmission of thrust from the screw to the head and to retain the strip 6 in permanent assembly with the main frame of the sash.

On the exterior of head 8 is a strip of cushion material 12, which may be felt, sponge rubber, or the like. The strip 12 is secured to the outside of head 8 as by adhesive and at the ends thereof is infolded, as shown at 13, to the inside of head 8, but not secured thereto. This construction provides a tail portion on the cushion strip, which may be freely adjusted to fill such space as remains at the corners upon final adjustment of the sash to a permanent window frame.

In the embodiment shown, the web portion 7 is nearly, but not exactly, perpendicular to the head portion 8 of strip 6. The few degrees of disparity from right angular relationship of the web and head causes the web to take the canted position clearly shown in Figure 2 within kerf 5, so that there is at least a line of seal between one side of the web 7 and the wall of kerf 5, but in most instances, two lines of seal will be obtained,

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one at each wall of the kerf 5. Of course, it will be readily understood that the same result may be achieved by constructing the strip 6 with the web 7 substantially perpendicular to the head 8 and by cutting the kerf 5 slightly out of perpendicular to the exterior marginal edge of the kerfed member, such as 4.

In order to provide for swiveling the end of adjusting screw 11 in head 8 of strip 6 without unduly interrupting the flatness of the exterior surface of head 8, which is to receive the cushion strip 12, it is contemplated that the outer end of screw 11 be provided with a circumferential groove 23 as near as mechanically possible to the outer end of the screw. In this connection, it is pointed out that the only forces of substantial magnitude which are translated by the mechanism are those of outward thrust from the screw to the head and consequently the overhanging portion of the end of the screw may be made very thin and sufficient only to sustain the weight of the member 6 and cushion 12. In carrying out this aspect of the invention, the head 8 is provided with a key slot 14 having an enlarged portion sufficient to accommodate the full diameter of screw 11 and a constricted portion of lesser width to accommodate the circumferential groove 23. With such an arrangement, the strip 6 may be emplaced upon one or more of the adjusting screws 11, already in position in the frame, and the strip 6 longitudinally moved until the groove 23 is in the narrow portion of slot 14 and a suitable means applied to prevent removal of the groove 23 from the narrow portion of slot 14. Such a means for preventing displacement may take the form of a thin strip of sheet metal 15 having a tongue 16 adapted to pass through a slot 17 in head 8 and be bent over on the interior. The opposite end of the strip 15 is arranged to engage within groove 23 in screw 11 and thus prevent longitudinal displacement thereof.

By thus constructing the adjustable elements of the storm sash, a construction is provided which is not only substantially weather-tight, but which is easily adjusted within the range usually necessary to adapt a prepared storm sash to the idiosyncrasies of a permanent window frame. As pointed out hereinbefore, the strip 6 is preferably formed of sheet metal having a thickness on the order of $\frac{1}{8}$ of an inch. The flexibility inherent in such a strip renders it adaptable to and enables it to accommodate minor variations and idiosyncrasies in the permanent frame of a window. Such self-adaptability is not obtainable when stiff material is utilized for the purpose.

As hereinbefore remarked, a particularly advantageous feature of the construction shown in the drawings, resides in the canting of the web 7 within kerf 5. Such canting of the web within the kerf will be understood when it is realized that upon adjusting the storm sash to the permanent frame of a window, the head 8 is receiving thrust from screw 11 and consequently the head 8 will tend to orient itself normally to the axis of screw 11. Under such circumstances, when the web 7 is out of perpendicular relationship to the head 8 (and the axis of screw 11 as well as the axis of kerf 5 are perpendicular to head 8) there will be an obliquity between the web 7 tending to produce a line of contact in the inner upper corner of web 7 and at the lower outer corner of kerf 5 (as seen in Figure 2). As shown in Figure 4, the same result is accomplished by changing the angularity between the several parts. In this form the strip 46 is bent so that the head 48 is

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perpendicular to the web 47, but the axis of the screw 11 is disaligned with respect to the kerf 5 to produce the cant.

In the embodiment shown in Figure 5, the strip 56 has its web 57 forming slightly more than 90 degrees, with the head 58 thereby canting the web 57 within the kerf 5 in the opposite direction from that shown in Figures 2 and 4, but none the less forming lines of seal between the web and the

kerf. At the upper right-hand corner of the sash shown in Figure 1, the end strip 6 overlaps the side strip 6. In the embodiment shown, the two thicknesses of web 7 are accommodated at the corner by enlarging the kerf thereat as by offsetting the end kerf from the side kerf to the extent of the thickness of a web, so that when the two kerfs overlap, a wider kerf will exist. Alternatively, the adjacent ends of the two strips 6 may be mitered.

In applying the storm sash to a window, it will be understood the strip 6 is in its contracted position, as shown in Figure 1. When the storm sash is in place, the several screws 11 are adjusted so as to force the strip 6 outwardly toward engagement with the permanent frame of the window. When the screws have all been turned to the point that there is a snug engagement throughout the periphery of the window, i. e., at both ends and both sides, the inturned portions 13 of the cushion material 12 are worked out to fill the space remaining at the corner and thus render the construction weather-tight. The nature of the cushion material 12 and the length of tail 13 are such that the latter may be folded to completely fill the corner with enough left to be folded on in inside of head 8 to frictionally engage both the head 8 and the edge surface of the frame piece thus to substantially anchor the folded material in proper position.

From the foregoing description, it is apparent that those skilled in the art will understand the construction and operation of the device. While the preferred embodiment of the invention has been discussed in detail, it is contemplated that many variations in the details of construction of the several elements may be made by those skilled in the art without departing from the spirit of this invention and consequently such modifications and variations are contemplated by and within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a metal strip having a thin elongated web slidably fitting within said kerf for relative in-and-out movement and cushion material affixed to the web at the exterior of and substantially parallel to the outside edge of the kerfed member, said kerf having a depth dimension many times its width dimension and said web being correspondingly proportioned, and means for locking said strip in adjusted position relative to the main frame.

2. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the

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longitudinal margin of the kerfed member, said kerf having a depth dimension many times in excess of its width dimension and said web being correspondingly proportioned, said head being faced with cushion material, and means for adjustably locking said strip relative to said main frame.

3. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the longitudinal margin of the kerfed member, said kerf having a depth dimension many times in excess of its width dimension and said web being correspondingly proportioned, said head being faced with cushion material, and means bearing against said head at a point displaced from said web for forcing said strip outwardly relative to the main frame.

4. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the longitudinal margin of the kerfed member, said kerf having a depth dimension many times in excess of its width dimension and said web being correspondingly proportioned, said head being faced with cushion material, and an adjusting screw swiveled in said head and engaging an internally threaded part on said main frame.

5. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the longitudinal margin of the kerfed member, said kerf having a depth dimension many times in excess of its width dimension and said web being correspondingly proportioned, said head being faced with cushion material, and an adjusting screw swiveled in said head and engaging an internally threaded part on said frame, said adjusting screw bearing upon said head in displaced relation to said web.

6. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the longitudinal margin of the kerfed member, said kerf having a depth dimension many times in excess of its width dimension and said web being correspondingly proportioned, said head being faced with cushion material, and an internally threaded part, means connecting said part to said main frame, said means being free for limited relative movement in the plane of the outside edge of the kerfed member, and an adjusting screw engaging said internally threaded part and swiveled to said head.

7. The combination with a storm sash having

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a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a strip having a thin elongated web slidably fitting within said kerf for relative in-and-out movement and cushion material affixed to the web at the exterior of and substantially parallel to the outside edge of the kerfed member, said kerf having a depth dimension many times in excess of its width dimension and said web being correspondingly proportioned, and means for locking said strip in adjusted position relative to the main frame, said web being canted within said kerf.

8. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the longitudinal margin of the kerfed member, said head being faced with cushion material, and means for adjustably locking said strip relative to said main frame, said strip having its web and head in near to but out of perpendicular relation.

9. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the longitudinal margin of the kerfed member, said head being faced with cushion material, and an adjusting screw engaging an internally threaded part on said main frame, the outer end of said adjusting screw having a circumferential groove fitted into a slot in the head of said strip and means for preventing displacement of said groove from said slot.

10. The combination with a storm sash having a main frame consisting of horizontal members and vertical members, some of said members having a relatively deep kerf cut in the outside edge thereof, a sheet metal strip having a thin elongated web slidably fitting within said kerf and a head extending substantially parallel to the longitudinal margin of the kerfed member, a cushion member secured to the exterior of said head and extending beyond the ends thereof, the extended portion being folded back on the inside of the head but free for movement relative thereto, and means for adjustably locking said strip relative to said main frame.

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