Sept. 10, 1935. A. J. SPANJERS ET AL 2,013,869

WEATHER STRIPPING

Filed Jan. 27, 1934

Fig. 2

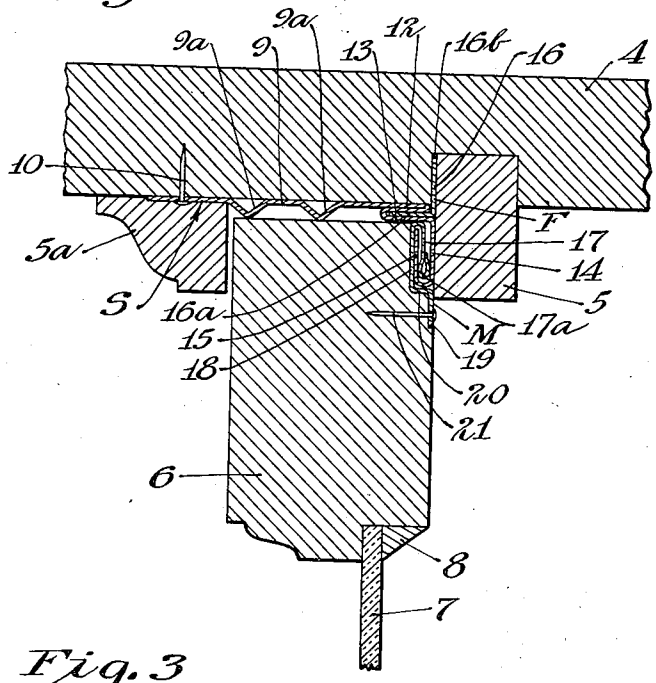


Fig. 1

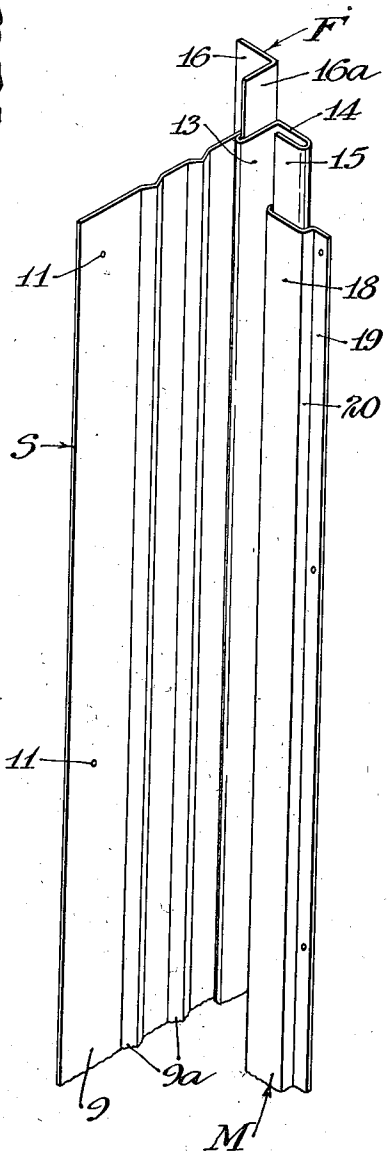
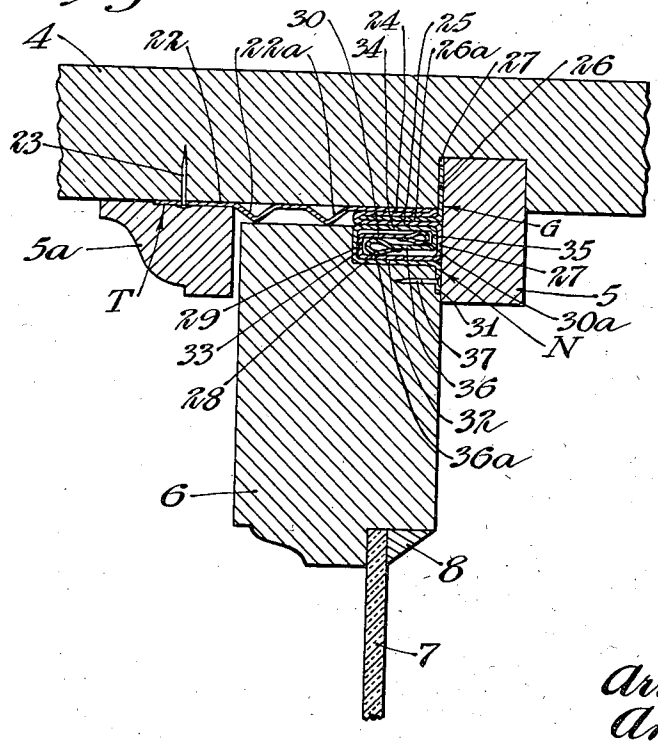


Fig. 3



Inventors
Arnold J. Spanjers
Anton R. Spanjers
By their Attorneys
Williamson & Williamson

Patented Sept. 10, 1935 2,013,869

UNITED STATES PATENT OFFICE

2,013,869

WEATHER STRIPPING

Arnold J. Spanjers and Anton R. Spanjers,
Minneapolis, Minn.

Application January 27, 1934, Serial No. 708,587

1 Claim. (Cl. 20—69)

Our present invention relates to improvements in weather stripping for sliding window sashes and particularly to weather stripping of the resilient slidably interlocked type.

It is an object of our invention to provide a simple and inexpensive form of weather stripping for the vertical edges of sliding window sashes capable of self adjustment to compensate for poor fit of sashes in their frames and changes in the fit caused by shrinkage of the sashes or frames.

Another object is to provide such weather stripping wherein self-adjustment thereof eliminates binding, sticking and distortion of parts thereof when the clearance between the sash and frame to which the same is applied has been changed due to shrinkage or other causes.

Still another object is to provide such a form of weather stripping wherein one member thereof attached to a sash, another member thereof attached to a frame, and a still other member having a tongue engaged in a groove in the frame cooperate to prevent passage of air between the sash and the frame regardless of shrinkage of the sash or frame.

Yet another object is to provide such weather strip construction whereby a sash will be resiliently guided in its frame and restrained from rattling.

A further object is to provide such weather stripping which is simple and inexpensive of manufacture and which may be easily and readily applied to sashes and frames of conventional commercial types.

These and other objects and advantages of the invention will be more fully set forth in the following description made in connection with the accompanying drawing, in which like reference characters refer to similar parts throughout the several views, and in which:—

Fig. 1 is a perspective view of a section of our improved weather stripping;

Fig. 2 is a horizontal sectional view of portions of a conventional window sash and frame with the weather stripping of Fig. 1 applied thereto, and

Fig. 3 is a horizontal sectional view of portions of a conventional window sash and frame with a slightly modified form of our weather stripping applied thereto.

Referring to the drawing, it will be seen that the embodiments of our invention shown are applied to a conventional window frame and sash including a vertical frame side 4, a stop 5, a moulding 5*a*, a vertical sash stile 6 and a glass pane 7 held in the sash by means of a putty fillet 8.

Our weather stripping includes a stationary strip S secured to the frame side 4 and a strip M secured to and movable with the sash stile 6, these strips being connected together in interlocked relation but being free for relative longitudinal sliding movement. A floating angle shaped strip F is also included and is retained as will be described. These three strips are constructed of thin resilient sheet material such as spring bronze or similar materials.

In the following description "outwardly" and "inwardly" are to be construed as respectively meaning toward the exterior and toward the interior of the building in which the sash and frame are installed.

Referring particularly to Figs. 1 and 2, a relatively wide strip of sheet material comprising the stationary strip S, is so formed as to have a main section 9 which is flat except for corrugations 9*a* formed therein. The inner edge of the main section 9 is secured to the frame side 4 by nails 10 driven through suitable apertures 11 in the main section 9 into the frame side 4 along a line disposed inwardly of and parallel to the outer side of the sash stile 6. The line referred to should preferably be located inwardly of the sash stile 6 as indicated in the drawing.

At the outer or free edge of the main section 9, the stationary strip S is bent upon itself to produce a section 12 formed integrally with and extending from the free edge of the main section 9 parallel to and in closely spaced relation with the outer portion of the main section 9. A second and oppositely turned bend is made in the stationary strip S to provide a third section 13 lying parallel to and somewhat spaced from the strip 12 as shown. A right angled bend is made in the stationary strip S to form a fourth section 14 extending toward the sash substantially in the plane of the outer side of the sash. Another bend is made in the stationary strip S to provide a fifth section 15 lying inwardly of the section 14 in parallel spaced relation thereto and extending toward the main section 9. One leg 16*a* of a floating strip F which has been bent at right angles substatially along its longitudinal center line, is placed between the sections 12 and 13 of the movable strip M to be slidably retained therebetween, the remaining leg 16 constituting a tongue projecting in a direction away from the sash stile 6. A groove 16*b* is formed in the frame side 4 adjacent the stop 5 to receive the tongue 16. The groove 16*b* is of such width as to permit free

movement of the tongue 16 with respect to the sides thereof.

The movable strip M of our weather stripping consists of a strip of sheet material bent along longitudinal lines to form a portion comprising spaced parallel sections 17 and 18 and having a bead 17a at the free edge of the section 17, an attachment section 19 and a diagonally disposed section 20 connecting the section 18 to the attachment section 19 in inwardly offset parallel relation thereto, as shown. The vertical sash stile 6 is rabbeted at its outer corner to receive the sections 17 and 18 and the bead 17a of the movable strip M and is further rabbeted to receive the attachment section 19 of the movable strip M which is secured to the stile by nails 21 or other suitable means. The sections 14 and 15 of the stationary strip S and the sections 17 and 18 of the movable strip M are connected together in interlocked but relatively slidable relation by disposing the section 15 of the stationary strip S between the sections 17 and 18 of the movable strip M and the section 17 of the movable strip M between the sections 14 and 15 of the stationary strip S, as shown. The sections 14 and 15 of the stationary strip S comprise a guide for the section 17 and bead 17a of the movable strip M. The various sections comprising the stationary, movable and floating strips S, M and F are so proportioned and arranged respectively that the outer sides of the sections 14, 16 and 19 lie substantially in the same plane as the outer side of the sash stile 6.

It will be seen that the interlocked sections 14, 15, 17 and 18 cooperate to offer an obstacle to the passage of air and moisture between the sash stile 6 and the stationary strip S and that contact of the section 13 and the corrugations 9a with the stile 6 offer further obstacles. The tongue 16 of the floating strip F in cooperation with the groove 16b and the section 9 of the stationary strip S, at its point of attachment to the frame side 4, prevent passage of air and moisture between stationary strip S and the frame side 4. Contact of the section 14 of the stationary strip S with the stop 5 also assists in preventing passage of air and moisture. Also, since the resilient stationary strip S is secured to the frame side 4 only at its inner edge and the tongue 16 of the floating strip F is movably engaged in the groove 16b, it is clear that the main section 9 of the stationary strip S is free to flex if and when shrinkage of the sash or frame takes place, thus preventing distortion of the interlocked sections 14, 15, 17 and 18 and permitting the same to remain in their normal positions relative to each other and to slide with respect to each other without binding or sticking. The corrugations 9a in the main section 9 of the stationary strip S improve the flexibility of the main section 9 as well as providing for contact of portions of the main section 9 with the sash stile 6. The corrugations 9a also constitute resilient guides for maintaining the sash in centered relation to the frame. It is to be noted that the arrangement of the interlocked sections 14, 15, 17 and 18 of the stationary and movable strips S and M is such that the outer portions of the stationary strip S will be drawn away from the frame side 4 with the movable strip M whenever the spacing between the sash stile 6 and the frame side 4 is increased due to shrinkage of the sash or frame or any other cause.

The bead 17a facilitates smooth sliding of the movable strip M with respect to the stationary strip S and also assists in the formation of an effective seal between the strips S and M.

In the installation of our weather stripping on a sliding window sash and frame, the moulding 5a and the sash are first removed from the frame and the vertical stiles of the sash are rabbeted as previously described and the groove 16b is formed in the frame side 4. The stationary and movable strips S and M are assembled in the relation shown in the drawing and previously described and the attachment section 19 of the movable strip M is attached to the sash stile 4. The floating strip F is placed in its normal position as shown in the drawing with the leg 16a thereof in position to be subsequently received between the sections 12 and 13 of the stationary strip S. Next, the sash, with the stationary and movable strips S and M attached is placed in the frame in its normal position and the leg 16a of the floating strip F is received between the sections 12 and 13 of the stationary strip S. The nails 10 are then driven and the moulding 5a is secured in place. If it is later desired to remove the sash from the frame, as for replacement of a broken window pane therein or other purposes, removal of the moulding 5a and extraction of the nails 10 is all that is necessary to release the sash and our weather stripping for such removal.

Referring particularly to Fig. 3, it will be seen that the stationary strip T, the movable strip N and the floating strip G of the modification shown are similar to the corresponding parts of the embodiment of our invention shown in Figs. 1 and 2 and described above. The main section 22, the corrugations 22a therein, the nails 23, the sections 24 and 25, the floating strip G and the groove 27, respectively, correspond to and are identical with the main section 9, the corrugations 9a, the nails 10, the sections 12 and 13, the floating strip F and the groove 16b of the form of weather stripping shown in Figs. 1 and 2 and described above.

At the outer edge of the section 25 of the stationary strip T a right angled bend is made to provide a section 27 extending toward the sash stile 6 and lying substantially in the same plane as the outer side of the stile 6. Another right-angled bend is made toward the inner side of the sash stile 6 forming a section 28 disposed substantially parallel to the main section 22. Another right angled bend is made toward the main section 22 and still another right angled bend is made toward the outer side of the sash to successively form a section 29 disposed at right angles and a section 30 disposed parallel to the main section 22. A bead 30a is formed at the free edge of the section 30.

The movable strip N is bent at right angles to form an attachment section 31 and a section 32 extending toward the inner side of the stile 6 in substantially parallel relation to the main section 22 of the stationary strip T. Another right angled bend is made toward the stationary strip T to produce a section 33 disposed at right angles to the stationary strip T and still another right angled bend is made to produce a section 34 extending toward the outer side of the stile 6 substantially parallel to the section 32. Two more right angled bends are made to successively form a section 35 extending away from the stationary strip T at right angles thereto and another section 36 extending toward the inner side of the sash stile 6 parallel to the stationary strip T. A bead 36a is formed at the free edge of the section 36.

The outer corner of the sash stile 6 is rabbeted

to receive the movable strip N and the attachment section of the movable strip is secured to the stile 6 by the nails 37 or other suitable means.

The movable strip N is connected to the stationary strip T in interlocked yet relatively slidable relation thereto by disposing the section 36 of the movable strip N between the sections 28 and 30 of the stationary strip T and the section 30 of the stationary strip between the sections 34 and 36 of the movable strip N.

The various sections of the stationary strip T and the movable strip N are so proportioned and arranged that the outer sides of the sections 26, 27 and 31 are all disposed substantially in the same plane as the outer side of the sash stile 6.

It is apparent that we have invented a novel, rugged, simple, inexpensive and effective form of weather stripping, capable of self-adjustment to compensate for changes in the clearance between the sash and its frame, such as occasioned by shrinking, sagging and other causes.

It will, of course, be understood that various changes may be made in the form, details, proportions and arrangement of the parts, without departing from the scope of our invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, and in the novel parts and combinations of parts disclosed and defined in the appended claim.

What is claimed is:—

In combination with a window frame provided with the usual stops and a sliding sash mounted in said frame, weather stripping comprising three cooperating pieces of resilient sheet material, the first of said pieces having an attachment portion secured to said frame between said frame and one of the longitudinal edges of said sash and having a grooved portion extending at an angle to said attachment portion and in close relation to the sash-side of one of said stops with the entrance to said groove being formed between the free edge of said piece and the part from which said grooved portion extends in angular relation, said second piece having an attachment portion secured to the face of said sash adjacent said stop, said face having its portion adjacent the outer longitudinal edge of said sash rabbeted, said second piece having a U-shaped sealing portion extending from said last mentioned attachment portion and accommodated in the rabbeted portion of said sash and extending, in general, parallel to the said face of said sash, said sealing portion being complementary in shape to the grooved portion of said first mentioned piece and being slidably interconnected therewith, the slidably interconnected portions of said two pieces being disposed between said face of said sash and the adjacent side of said stop, and a third piece of angular cross sectional shape having a flange which is not engaged by either of the slidably connected portions of said first and second pieces but which is sealed with said first piece and extends in a plane substantially parallel with the attachment portion of said first piece, said third piece having a flange extending substantially parallel with said face of said sash and being slidably received in a groove in said frame immediately adjacent said stop.

ARNOLD J. SPANJERS.
ANTON R. SPANJERS.