Jan. 1, 1957 D. M. HETTINGER 2,775,795

COMBINATION WEATHER-STRIP AND SASH GUIDE FOR DOUBLE HUNG WINDOWS

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Fig. 1.

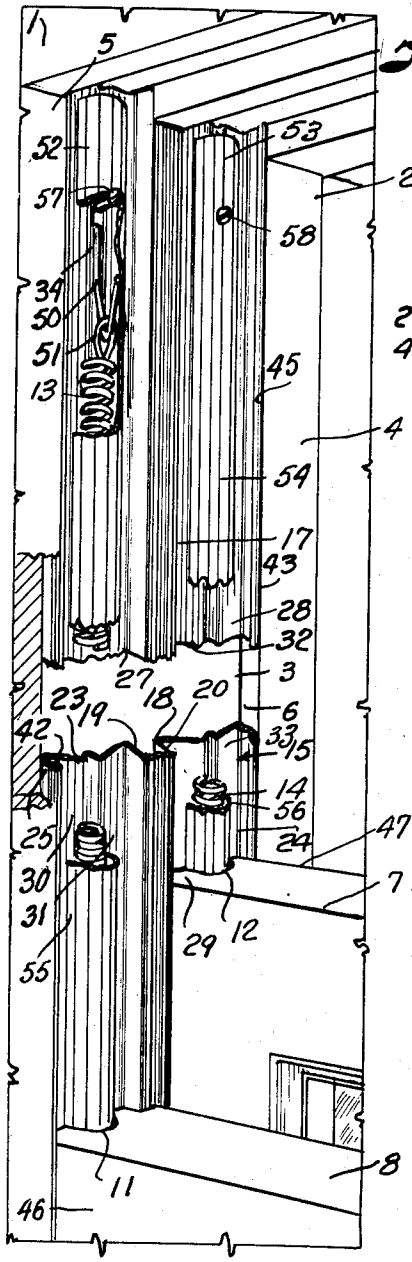


Fig. 2.

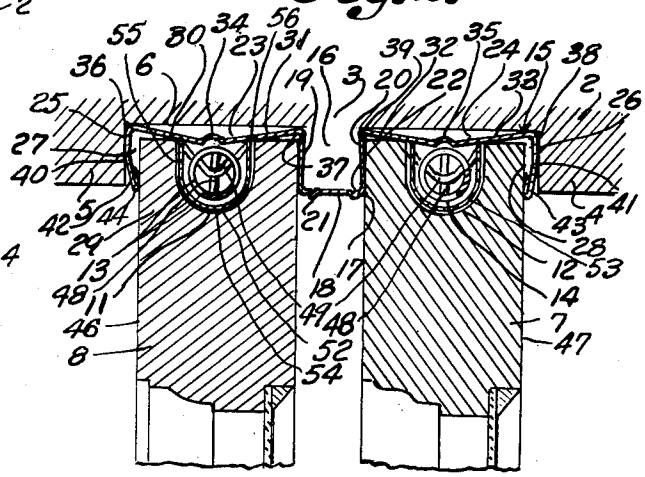


Fig. 3.

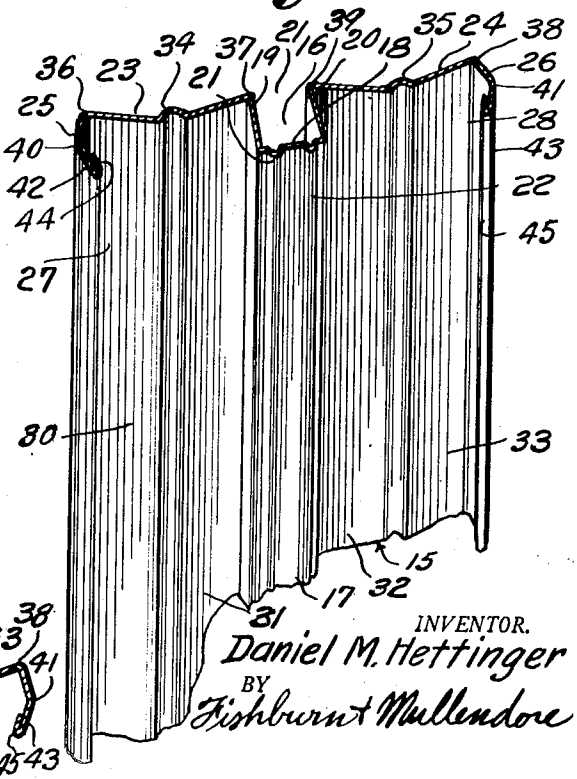
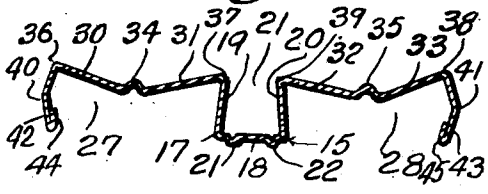


Fig. 4.



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COMBINATION WEATHER-STRIP AND SASH GUIDE FOR DOUBLE HUNG WINDOWS

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5 Claims. (Cl. 20—52)

This invention relates to a combination weather-strip and sash guide for double hung windows and has for its principal object to provide a unitary guide for the upper and lower sashes and having a shape to enhance sealing contact between the sash and frame of the window.

Other objects of the invention are to provide a combination guide and weather-strip that forms a plurality of sealing contacts with the sashes and their supporting frame; to provide a combination weather-strip and guide that is highly resilient to facilitate operation of the sash and yet provide an effective seal and sufficient friction to retain the sash in any open position; to provide a combination guide and weather-strip that is not effected by shrinking and swelling of wooden frames and sashes; to provide a combination weather-strip and sash guide construction that does not subject the window sash to excessive wear; and to provide a combination weatherstrip and guide particularly adapted for use with spring balances and the covering shield or housing of such balances.

In accomplishing these and other objects of the invention, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a fragmentary perspective view of a window equipped with a combination weather-strip and sash guide embodying the features of the present invention, with portions of the guide, spring balances and covering shields being broken away to better illustrate the construction.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary perspective view of the combination weather-strip and guide.

Fig. 4 is a cross section through the combination weather-strip and guide prior to installation.

Referring more in detail to the drawings:

1 designates a conventional double hung window including a frame 2 having side jambs 3, outer blind stops 4 and an inner stop 5 cooperating with the jamb in forming a sash way 6 in which the side edges of upper and lower sashes 7 and 8 are slidably mounted.

In windows of this character, the sash must slide smoothly and freely within the ways. It has been the practice to fit the windows rather loosely and provide spring balance grooves 9 and 10 in side stiles 11 of the sash to accommodate spring balances 13 and 14, but when spring type balances are used, such loosely fitted sash will not stay in their adjusted open positions under pull of the spring balances. Also, the space required between the marginal edges of the sash and the frame results in rattling sash and leakage therearound. Various forms of weather-stripping have been proposed in an attempt to provide the necessary seal and sufficient friction to retain the sash in adjusted open position, but most of them have proved impracticable because the rigidity required interferes with free sliding action of the sashes and the weather-stripping is not sufficiently resilient to make a thoroughly efficient seal and prevent wear of the sash.

In overcoming this difficulty, I have provided a combination weather-strip and guide 15 which in effect forms

a facing for the jambs and a metal to wood contact with the sash thereby resulting in a smoothly sliding action of the sash and forming the desired weather seals and frictional contacts without binding of the sashes in the frame.

In the illustrated instance, the combination weather-strip and guide is formed of a strip of relatively thin, spring-like material of suitable gauge to be contained within the space between the sash and frame.

Extending longitudinally at the center of the strip is a channel 16 which provides a parting stop 17 and includes a web portion 18 and lateral flange portions 19 and 20 that normally form acute angles with the web 11 so that the entrance 21 of the channel is of less width than the web 18. The web portion 18 is preferably provided with parallel longitudinal corrugations 21 and 22 to further enhance flexibility of the strip in a transverse direction and to stiffen the strip in a longitudinal direction.

Extending laterally from each flange portion 19 and 20 are web portions 23 and 24 that face the bottom of the sash ways and which have lateral flanges 25 and 26 on their outer edges to cooperate with the flange portions 19 and 20 in providing channel guide ways 27 and 28 for the side edges 29 of the sash as shown in Figs. 1 and 2. The web portions 23 and 24 are of arch shape cross section in that they have transversely converging sash contacting portions 30—31 and 32—33 joining in reversely positioned corrugations 34 and 35 that extend longitudinally of the strip to enhance the resiliency in a transverse direction and cooperate with the bends 36—37 and 38—39 to enhance rigidity in the longitudinal direction of the strip.

The strip is preferably formed so that the bends 36 and 38 are out of plane with the bends 37 and 39 as best shown in Fig. 4. The flanges 25 and 26 have longitudinal bends 40 and 41 which form obtusely extending wings 42 and 43 converging inwardly and provided with reverse bends 44 and 45 to contact side faces 46 and 47 of the sash. The angles between the web portions 30—33 and the side flanges 25—26 are substantially right angles as shown in Fig. 4.

When the combination weather-strip and guide is to be applied, they are cut to the length to conform with the length of the sash ways in the window frame. The lower ends of the spring balances 13 and 14 are placed within the sash grooves 11 and 12, and the eyes 48 thereof are anchored to the sash by anchors 49 that are driven into the edges of the sashes. The strips are then fitted over the side edges of the upper sash and the fitted assembly is slid partially into the window frame, leaving the inner way for the lower sash projecting into the room. In this position, the strip will flex outwardly to allow entrance of the lower sash into the inner way. The entire assembly is then pushed all the way into the frame. The window stops 5 are then applied to give the proper fit of the sash within the frame.

The upper ends of the spring balances 13 and 14 project from the side grooves of the sash. Anchor hooks 50 are driven through the weather-strip and into the jamb near the upper end thereof. The springs are then stretched to engage the eyes 51 with the hooks 50.

After anchoring the spring balances, channel shape housings 52 and 53 are placed over the spring balances. The housings have substantially semicylindrical web portions 54 conforming to the shape of the bottoms of the sash grooves and have laterally parallel extending flanges 55 and 56 that freely contact on the web portions 24 and 25 as shown in Fig. 2. The lower ends of the housing project within the sash grooves 11 and 12 when the sashes are in their lowermost position. The upper ends of the housings are secured to the window jambs by fastening devices such as screws 57 and 58 that extend through the web portions of the housings and through the weather-

strips into the window jamb. The housings **52** and **53** of a length to cover the springs when the sash are in their lowermost position and to extend slightly within the upper ends of the sash grooves. This gives ample room for the anchors **49** and hooks **48** to operate as the sash are moved up and down within the sash ways.

It is obvious that the sashes exert pressure on the portions **30—31** and **32—33** to form sealing contacts at the respective sides of the sash grooves **11** and **12**. Simultaneously, the bends **37** and **39** are pushed into sealing contact with the face of the jamb **3** and the bends **36** and **38** are pushed into the corners between the stops **4** and **5** and jambs **3**. The flange portions **25** and **26** bear against the stops **5** and **4** and the wings **42** and **43** bear upon the inner and outer faces **46** and **47** of the respective upper and lower sash to urge the sash into contact with the flange portions **19** and **20** of the parting stop portion of the strip. It is thus obvious that the sashes have ample movement within the ways to provide easy operation of the sash, but the resilient character of the material maintains the contact points to exclude the weather, dust and the like exterior elements and to prevent loss of interior temperatures.

What I claim and desire to secure by Letters Patent is:

1. A combination weather seal, guide and balance for a window having side jambs with stops at respective side edges of said jambs and double hung window sash slidable between said stops and vertically of the jambs with edge faces of the sash having grooves to accommodate coil springs, said combination weather seal and guide including unitary members formed of thin spring metal and having a central parting stop portion engageable between the sash, web portions integral with said parting stop portion and extending laterally therefrom in opposite directions from the parting stop and having arch-shaped cross section to provide spaced apart parallel linear jamb contacting portions at substantially the juncture of said web portions with the parting stop portion and substantially at the stops of the jamb respectively and intermediate yieldable portions extending inwardly of the window and adapted to be normally spaced from faces of said jambs to contact with side edges of the grooves of said sash with said contacts being effective the full height of the jambs, coil spring housings of channel-like cross-section engageable within said grooves of the sash and having parallel sides with free edges adapted for bearing contact with the yieldable web portions to close the space between side edges of the sash and said jambs and to provide for free movement of the sash relatively to the jamb, and springs contained within the spring housings with upper ends adapted to be fastened near the upper ends of the jambs and lower ends to the sash at lower portions thereof.

2. A combination weather seal, guide and balance for a window having side jambs with stops at respective side edges of said jambs and double hung window sash slidable between said stops and vertically of the jambs with edge faces of the sash having grooves to accommodate coil spring balances, said combination weather seal, guide and balance including unitary members formed of thin spring metal for facing the jambs and having spaced apart web portions connected at side edges thereof by inner flange portions with a central web portion to form a resilient parting stop engageable between the sash, said spaced apart web portions having arched cross section with mid-portions of the arches being arranged to extend inwardly of the window and yieldingly spaced from the side jambs and adapted to make contact with edges of the grooves in the sash, said spaced apart web portions having outer flanges along outer edges thereof adapted to engage said stops and cooperating with the inner flange portions and said spaced apart web portions to effect seals on sides of the sash and to close the space between the jambs and sash under pressure of the edge faces of the sash upon said arches to pivot said outer flange portions inwardly for forcing the sashes toward each other and to cooperate with the inner flange portions for gripping marginal inner and outer faces of the sash therebetween to enhance said seals, coil spring housings of channel-like cross section engageable within said grooves of the sash and having parallel sides with free edges of said sides bearing upon the yieldable arches of said lateral web portions for shifting the spring housings under pressure of the sash sliding thereover to provide for free movement of the sash relatively to said housings while maintaining said seals, and spring balances contained within the spring housings with upper ends of said balances being adapted to be fastened near the upper ends of the jambs and lower end to the sash at lower portions thereof.

3. A combination weather seal, guide and balance for a window having side jambs with stops at respective side edges of said jambs and double hung window sash slidable between said stops and vertically of the jambs with edge faces of the sash having grooves to accommodate coil spring balances, said combination weather seal, guide and balance including unitary members formed of thin spring metal for facing the jambs and having spaced apart webs connected at side edges thereof by inner flange portions with a narrow web portion to form a resilient parting stop between said spaced apart webs for engagement between the sash, said spaced apart web portions having arched cross section with mid-portions of the arches arranged to extend inwardly of said window and to be yieldingly spaced from the side jambs and for contact with edges of the grooves in the sash, said spaced apart webs having outer flanges along outer edges thereof adapted to engage said stops and cooperating with the inner flange portions and said spaced apart webs to effect pressure on sides of the sash and to close the space between the jambs and sash under pressure of the edge faces of the sash upon said arches to pivot said outer flange portions inwardly to force the sashes toward each other and to cooperate with the inner flange portions in gripping marginal portions of the coil spring housings of channel-like cross section engageable within said grooves of the sash and having parallel sides with free edges of said sides bearing upon the yieldable arches of said spaced apart webs, said spring housings being shiftable under pressure of the sash when sliding thereover to provide for free movement of the sash relatively to said housings while maintaining said seals, and spring balances contained within the spring housings with upper ends of said balances being adapted to be fastened near the upper ends of the jambs and lower ends to the sash as lower portions thereof, said outer flanges having obtusely extending wings converging inwardly and provided with reverse bends to enhance the seal with the sash under flexing of said arch portions.

4. A combination weather seal, guide and balance for a window having side jambs with stops at respective edges of said jambs and double hung window sashes slidable between said stops and vertically of the jambs with edge faces of the sash having grooves to accommodate spring balances, said combination weather seal, guide and balance including unitary members formed of thin spring metal for facing the jambs and having spaced apart web portions connected at side edges thereof by inner flange portions with a central web portion to form a resilient parting stop for engagement between said sashes, said spaced apart web portions having arched cross sections with mid-portions of the arches being arranged to extend inwardly of the window and yieldingly spaced from the face of the jambs and adapted to make contact with edges of the grooves in the sash, said spaced apart web portions having outer flanges along the outer edges thereof adapted to engage said stops and cooperate with the inner flange portions and spaced apart web portions to effect linear seals on sides of the sash and to close the space between the jambs and sash under pressure of the edge faces of the sash upon said arches and to pivot said outer flange portions inwardly for forcing the sashes toward each other

and to cooperate with the inner flange portions for gripping inner and outer faces of said sashes therebetween to enhance said seals, spring housings having upper ends adapted to be secured to the jambs of the window and engaged within the grooves of the sash, coil spring balances contained within the spring housings and having lower ends adapted to be secured within the grooves of the sash.

5. A combination weather seal, guide and balance for a window having side jambs with stops at respective edges of said jambs and double hung window sashes slidable between said stops and vertically of the jambs with edge faces of the sash having grooves to accommodate spring balances, said combination weather seal, guide and balance including unitary members formed of thin spring metal for facing the jambs and having spaced apart web portions with a central web portion to form a resilient parting stop for engagement between said sashes, said spaced apart web portions having arched cross sections with mid-portions of the arches being arranged to extend inwardly of the window and yieldingly spaced from the face of the jambs and adapted to make contact with edges of the grooves in the sash, said spaced apart web portions having outer flanges along the outer edges thereof

adapted to engage said stops and cooperate with the inner flange portions and said spaced apart web portions to effect linear seals on sides of the sash and to close the space between the jambs and sash under pressure of the edge faces of the sash upon said arches and to pivot said outer flange portions inwardly for forcing the sashes toward each other and to cooperate with the inner flange portions for gripping inner and outer faces of said sashes therebetween to enhance said seals, spring housings having upper ends adapted to be secured to the jambs of the window and engaged within the grooves of the sash, coil spring balances contained within the spring housings and having lower ends adapted to be secured within the grooves of the sash, and said outer flanges having integral obtusely extending wings converging inwardly and provided with reverse bends to enhance the seal with the sash under flexing of said arch portions.

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