March 5, 1940. F. J. ROBINSON 2,192,776

WINDOW FRAME CONSTRUCTION

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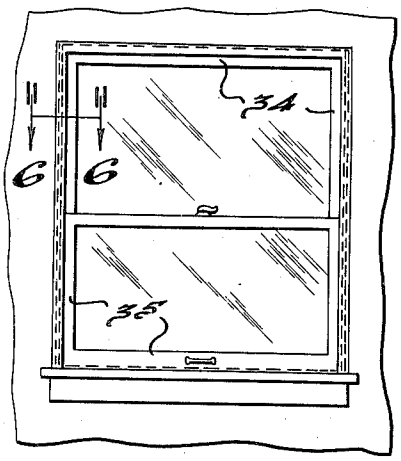


FIG. 1.

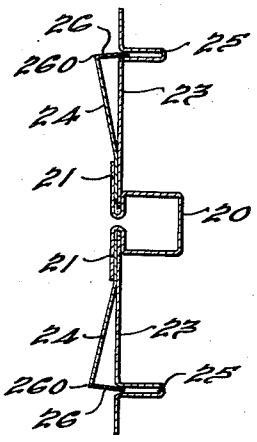


FIG. 2.

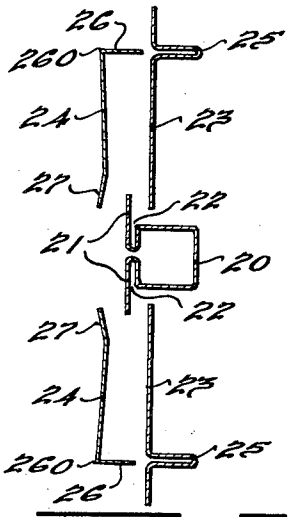


FIG. 3.

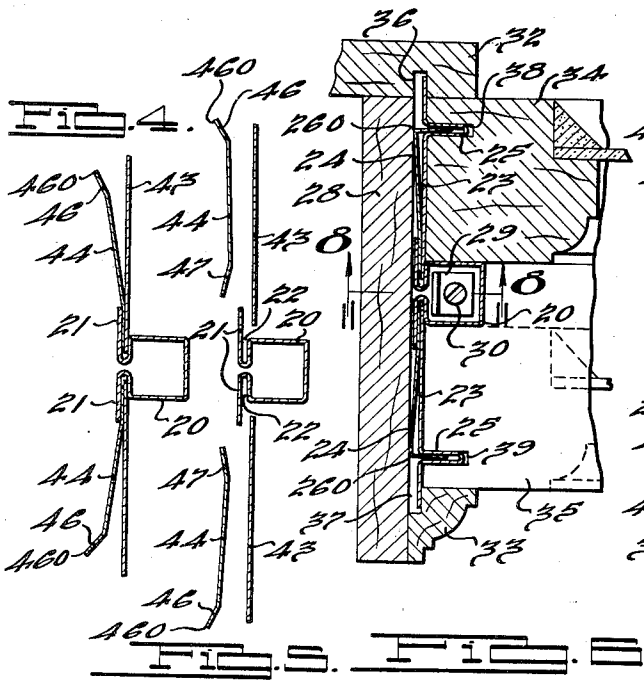


FIG. 4. FIG. 5. FIG. 6. FIG. 7.

INVENTOR

BY Frederick J. Robinson.

Everett G. Wright,

ATTORNEY

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WINDOW FRAME CONSTRUCTION

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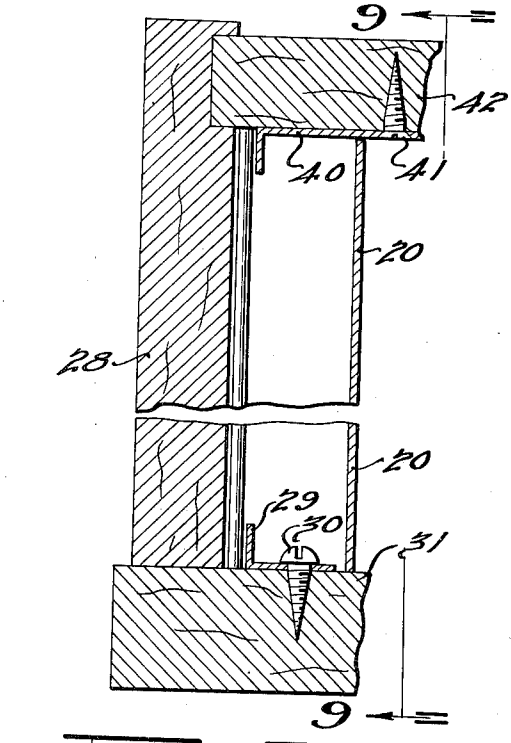


Fig. 8.

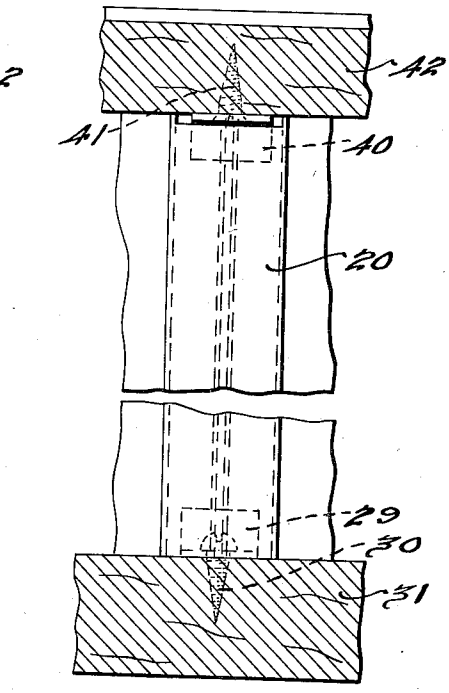


Fig. 9.

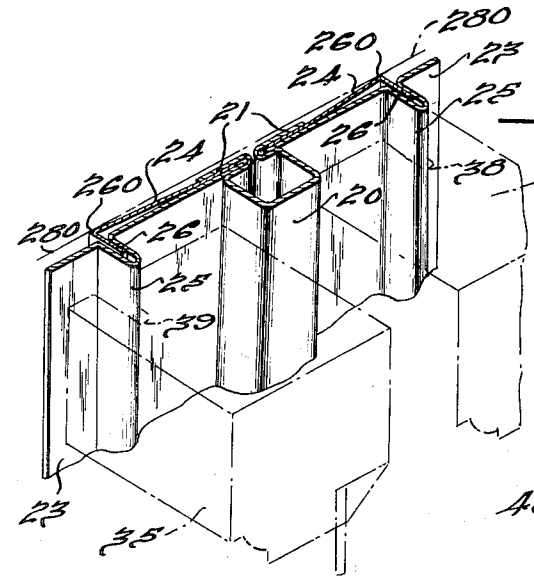


Fig. 10.

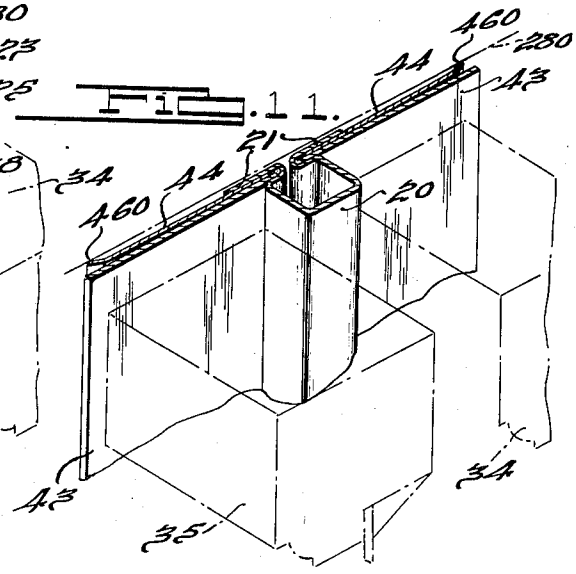


Fig. 11.

INVENTOR
BY Frederick J. Robinson.
Everett G. Wright,
ATTORNEY

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WINDOW FRAME CONSTRUCTION

Frederick J. Robinson, Detroit, Mich.

Application September 16, 1938, Serial No. 230,173

9 Claims. (Cl. 20—69)

This invention relates to metal weatherstripping and metal frame lining for double hung window construction.

It has been conventional practice to nail or screw metal frame lining or weatherstripping and parting stops to a window frame being lined or weatherstripped. When it becomes necessary to remove sash in order to replace a worn or broken sash cord or balance, the frame lining or weatherstripping and parting stops must be removed. The removal of the frame lining or weatherstripping and parting stops generally destroys them or bends them to such an extent that they cause binding of the sash when replaced. Also, the window frame onto which parting stops, frame lining or weatherstripping is secured generally warps and causes binding of sash mounted in the window frame.

When weatherstripping is installed in remodeling or repair jobs, the window frames are generally bulged, warped or dented which pulls weatherstripping when nailed thereto out of alignment with respect to the saw cut or kerf in the sash which receives the rib of the weatherstripping with the consequence that the said kerfs must be quite wide and the fit between the sash and the weatherstrip ribs must be quite free to permit easy sliding of the sash with respect thereto whereupon much of the effectiveness of rib type weatherstripping is lost. Much time is spent in cutting and fitting frame lining or weatherstripping in both new and alteration jobs to compensate for irregularities in the window frames to which it is applied.

With the foregoing in view, one object of the invention is to provide a metal weatherstripping or frame lining including a metal parting strip which, as a unit, is entirely self-adjusting to irregularities in a window frame in which it is mounted and to irregularities in the sash hung in the said window frame.

Another object of the invention is to provide the combination of a metal parting strip and metal weatherstripping which is self-adjusting laterally with respect to the window frame and which will automatically compensate for any irregularities and warping of the face of the window frame or edge of the sash hung therein.

Another object of the invention is to provide a metal weatherstripping or metal frame lining including a parting strip therefor which may be easily and readily installed, removed for maintenance and reinstalled without damage to the said weatherstripping or frame lining and parting stop.

Another object of the invention is to provide, in combination, a metal weatherstripping or frame lining including means for constantly urging the same against the edge of the sash hung in the said window frame, which means provides an air and moisture seal between the back of the said weatherstripping or frame lining and the window frame to which the same is applied.

Another object of the invention is to provide the combination of a metal weatherstrip or metal frame lining and a parting stop which is universally self-adjusting with respect to irregularities and warping of the window frame and sash slidably mounted therein.

Another object of the invention is to provide, in double hung window construction, the combination of a metal parting strip secured to a window frame at the head and sill thereof in such a manner as to allow a limited horizontal universal movement thereof, metal frame lining or weatherstripping slidably engaged in the base of the said parting stop and retained in kerfs in the blind and trim stops of the window frame, and resilient means also slidably engaged in the base of the said parting stop adapted to urge the said frame lining or weatherstripping against the edge of the sash hung in the said window frame which simultaneously provides a weatherproof seal between the said lining or weatherstripping and the window frame which compensates for irregularities in the said window frame and sash whereby to permit warping and swelling of the said window frame and sash without interfering with the sliding of the sash in the lined or weatherstripped window frame.

Other objects of the invention will become apparent by reference to the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a more or less diagrammatic elevational view of a double hung sash and frame with the invention applied thereto.

Fig. 2 is a detailed sectional view of a weatherstripping unit embodying the invention.

Fig. 3 is an exploded sectional view of the novel weatherstripping unit disclosed in Fig. 2, clearly showing the various parts thereof.

Fig. 4 is a detailed sectional view of a frame lining unit embodying the invention.

Fig. 5 is an expoded sectional view of the novel frame lining unit disclosed in Fig. 4, clearly showing the various parts thereof.

Fig. 6 is a horizontal sectional view taken on the line 6—6 of Fig. 1, showing an installation of

a weatherstripping unit embodying the invention in a window frame.

Fig. 7 is a horizontal sectional view similar to Fig. 6, showing an installation of a metal frame lining unit embodying the invention in a window frame.

Fig. 8 is an enlarged vertical sectional view taken on the line 8—8 of Fig. 6, showing how the parting strip of a weatherstripping or frame lining unit embodying the invention is mounted in a window frame to permit a limited horizontal universal movement thereof with respect to the window frame.

Fig. 9 is a vertical sectional view taken on the line 9—9 of Fig. 8.

Figs. 10 and 11 are enlarged views in perspective, showing in detail the construction disclosed in Figs. 6 and 7 respectively.

Referring now to the drawings wherein like numerals refer to like and corresponding parts throughout the several views, the novel weatherstripping and frame lining units disclosed therein are preferably formed of sheet galvanized iron, zinc, aluminum, copper, brass, bronze or other metal which will not rust readily and which will continually present a smooth surface against which wood sash may slide freely. The spring sealing element of the novel weatherstripping and frame lining units is preferably formed of thin resilient sheet brass or bronze, however, any resilient sheet material may be used therefor.

The novel weatherstripping unit disclosed in Figs. 2 and 3 is composed of a square or rectangular shaped sheet metal parting strip **20** having a base **21** formed integral therewith in such a manner as to provide a pair of outwardly disposed continuous slots **22** of a width to slidably receive the inner edge of metal weatherstripping **23** and the inner flange of resilient seals **24** as best shown in Fig. 2, the said slots **22** in the parting strip **20** being sufficiently deep to permit the said weatherstripping **23** and seals **24** to maintain engagement therewithin and at the same time admit of lateral adjustment between the said parting strip **20** and the weatherstripping **23** and seal **24** engaged in each side thereof.

The rib **25** of the weatherstripping **23** is so formed as to provide a narrow continuous slot along the back of the said weatherstripping **23**. The resilient seal **24** provided with each piece of weatherstripping **23** is formed with an outer flange **26** turned at substantially right angles thereto which telescopes into the said slot in the back of the weatherstripping **23** formed by the continuous rib **25** thereof. The said resilient seal **24** also has an inner flange **27** bent at a comparatively slight angle opposite to the bend of the outer flange **26** thereof which causes the continuous corner or sealing edge **260** at the base of the said outer flange **26** to be constantly urged rearward of the plane of the weatherstripping **23** as shown in Fig. 2 when the said inner flange **27** of a resilient seal **24** and the inner edge of the weatherstripping **23** is telescoped in one of the continuous slots **22** of the parting strip **20**. The said angle at which the inner flange **27** of the resilient seal **24** is bent is preferably sufficiently small to avoid causing the outer flange **26** of the said resilient seal **24** from springing out of the rearwardly disposed slot in the weatherstripping **23** formed by the continuous rib **25** thereof.

Referring now to Figs. 6, 8 and 9, the weatherstripping unit consisting of a parting strip **20**, two pieces of ribbed weatherstripping **23** and two resilient seals **24** are assembled together as indicated in Fig. 2 and positioned against the window frame **28** over an angle retaining clip **29** secured by a screw **30** to the window sill **31** with the upstanding leg thereof located in spaced relationship to the said window frame **28** and disposed centrally between the blind stop **32** and trim stop **33**, the said trim stop **33** being previously temporarily removed to admit of hanging the upper sash **34** and lower sash **35** and to permit the outer edges of the weatherstripping **23** to be positioned in suitable saw cuts or kerfs **36** and **37** provided in the said blind stop **32** and trim stop **33** respectively. The upper sash **34** and lower sash **35** are provided with suitable saw cuts or kerfs **38** and **39** respectively to receive the ribs **25** of the weatherstripping **23**. After the upper sash **34** is properly lined up to slide in a channel formed by the parting strip **20**, weatherstripping **23** and the blind stop **32**, and after the lower sash **35** is properly lined up to slide in a channel formed by the parting strip **20**, weatherstripping **23** and the trim stop **33**, an angle retaining clip **40** is secured by a screw **41** to the window head **42** with the depending leg thereof positioned within the end of the parting strip **20** spaced from the sides and base thereof.

It will be particularly noted that, when the sash **34** and **35** are placed against the face of the weatherstripping **23** with the rib **25** of each piece of weatherstripping **23** positioned in one of the saw cuts or kerfs **38** and **39** in the said sash **34** and **35** respectively, the said sash **34** and **35** urge the weatherstripping **23** against the window frame **28** with the continuous corner or sealing edge **260** at the base of the outer flange **26** of each of the resilient seals **24** in contact with the face of the window frame **28**, see Fig. 10 in which the face of the window frame **28** is designated by the dot and dash line **280—280**.

If and when the said window frame **28** and/or the sash **34** and **35** become warped or swelled, or if the window frame **28** and/or the sash **34** and **35** are constructed slightly out of alignment, the novel weatherstripping unit disclosed in Figs. 2 and 3 compensates for irregularities in the sash **34** and **35** and the window frame **28** and for misalignment thereof in any direction whatsoever. The mounting of the parting stop **20** for a limited horizontal universal movement by means of lower and upper retaining clips **29** and **40**, the sliding of the weatherstripping **23** and resilient seal **24** within the slots **22** in the base of the parting stop **20**, and the urging of the weatherstripping **23** and parting stop **20** therebetween outward from the window frame **28** against the edges of the sash **34** and **35** by the spring action of the resilient seals **24** assures a perfectly fitting tightly weatherstripping sash mounting in a window frame employing the novel weatherstripping unit disclosed herein, the sealing edges **260** of the resilient seals **24** providing a double weather contact or seal between the back of the weatherstripping **23** and the window frame **28** at all times.

The novel frame lining unit disclosed in Figs. 4 and 5 is composed of a square or rectangular shaped parting strip **20** having a base **21** formed integral therewith in such a manner as to provide a pair of outwardly disposed continuous slots **22** of a width to slidably receive the inner edge of the metal frame lining strip **43** and the inner flange of resilient seals **44** as best shown in Fig. 4, the said slots **22** in the parting strip **20** being sufficiently deep to permit the said frame lining **43** and seals **44** to maintain engagement therewithin and at the same time admit of lateral adjust-

ment between the said parting strip 20 and the frame lining 43 and seal 44 engaged in each side thereof.

The resilient seal 44 provided with each piece of frame lining 43 is formed with an outer flange 46 bent at an angle preferably less than 45 degrees to present a sealing edge 460 which will contact the window frame against which the frame lining unit is mounted as hereinafter described. The said resilient seal 44 has an inner flange 47 bent at an angle less than 45 degrees on the same side of the said resilient seal 44 as the bend of the outer flange 46 thereof. The said bend of the inner flange 47 of the resilient seal 44 causes the continuous sealing edge 460 of the outer flange 46 thereof to be constantly urged rearward of the plane of the frame lining 43 as shown in Fig. 4 when the said inner flange 47 of the resilient seal 44 and the inner edge of the frame lining 43 is telescoped in one of the continuous slots 22 of the parting strip 20.

Referring now to Figs. 7, 8 and 9, the frame lining unit consisting of a parting strip 20, two pieces of frame lining 43 and two resilient seals 44 are assembled together as indicated in Fig. 4 and positioned against a window frame 28 over an angle retaining clip 29 secured by a screw 30 to the window sill 31 with the upturned leg thereof located in spaced relationship to the said window frame 28 and disposed centrally between the blind stop 32 and trim stop 33, the said trim stop 33 being previously temporarily removed to admit of hanging the upper sash 34 and lower sash 35 and to permit the outer edges of the frame lining 43 to be positioned in suitable saw cuts or kerfs 36 and 37 provided in the said blind stop 32 and trim stop 33 respectively. After the upper sash 34 is properly lined up to slide in a channel formed by the parting stop 20, frame lining 43 and the blind stop 32, and after the lower sash 35 is properly lined up to slide in a channel formed by the parting strip 20, frame lining 43 and the trim stop 33, an angle retaining clip 40 is secured by a screw 41 to the window head 42 with the depending leg thereof positioned within the end of the parting strip 20 spaced from the sides and base thereof.

It will be particularly noted that, when the sash 34 and 35 are placed against the face of the frame lining 43, the said sash 34 and 35 urge the frame lining 43 against the window frame 28 with the continuous sealing edge 460 of the outer flange 46 of each of the resilient seals 44 in contact with the face of the window frame 28, see Fig. 11 in which the face of the window frame 28 is designated by the dot and dash line 280—280.

If and when the said window frame 28 and/or sash 34 and 35 become warped or swelled, or if the window frame 28 and/or the sash 34 and 35 are constructed slightly out of alignment, the novel frame lining disclosed in Figs. 4 and 5 compensates for irregularities in the sash 34 and 35 and window frame 28 and for misalignment thereof in any direction whatsoever. The mounting of the parting stop 20 for a limited horizontal universal movement by means of lower and upper retaining clips 29 and 40, the sliding of the frame lining 43 and resilient seal 44 within the slots 22 in the base of the parting stop 20, and the urging of the frame lining 43 and the parting stop 20 therebetween outward from the window frame 28 against the edges of the sash 34 and 35 by spring action of the resilient seals 44 assures a perfectly fitting tightly sealed sash mounting in a lined window frame. The urging of the frame lining 43 by the resilient seals 44 against the edges of the sash 34 and 35 provides an effective weatherstripping, the sealing edges 460 of the said resilient seals providing a double weather contact or seal between the back of the frame lining 43 and the window frame 28 at all times.

Although the installation of the novel weatherstripping units and novel frame lining units have been described to be accomplished in a particular manner or sequence hereinbefore, it is obvious that the installation thereof may be accomplished otherwise to accomplish like and equivalent results.

Although but two embodiments and installations of the invention have been disclosed and described in detail, it is obvious that many changes may be made in the size, shape, details and arrangement of the various elements of the invention without departing from the spirit thereof as defined in the appended claims.

I claim:

1. In combination, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, ribbed weatherstripping disposed on each side of said parting strip with the inner edge thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of weatherstripping, an outer flange on each seal formed at substantially right angles thereto telescoped into a slot formed in the back of the said weatherstripping by the rib thereof, and an inner flange on each seal bent at a comparatively slight angle opposite to the bend of the said outer flange thereof slidably positioned in a slot in the said parting strip.

2. In combination, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, ribbed weatherstripping disposed on each side of said parting strip with the inner edges thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of weatherstripping, an outer flange on each seal formed at substantially right angles thereto telescoped into a slot formed in the back of the said weatherstripping by the rib thereof, an inner flange on each seal bent at a comparatively slight angle opposite to the bend of the said outer flange thereof slidably positioned in a slot in the said parting strip, and means for mounting the said parting strip in a window frame with the resilient seals engaged therein in contact with the said window frame so as to admit of a limited horizontal universal movement of the said parting strip and resilient seals with respect to the said window frame.

3. In combination with a window frame, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, ribbed weatherstripping disposed on each side of said parting strip with the inner edge thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of weatherstripping, an outer flange on each seal formed at substantially right angles thereto telescoped into a slot formed in the back of the said weatherstripping by the rib thereof, an inner flange on each seal bent at a comparatively slight angle opposite to the bend of the said outer flange thereof slidably positioned in a slot in the said parting strip, and

means for mounting the said parting strip in a window frame with the resilient seals engaged therein in contact with the said window frame so as to admit of a limited horizontal universal movement of the said parting strip and resilient seals with respect to the said window frame, the outer edges of the said weatherstripping being retained in suitable kerfs in the blind and trim stops of the said window frame.

4. In combination with a window frame, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, ribbed weatherstripping disposed on each side of said parting strip with the inner edge thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of weatherstripping, an outer flange on each seal formed at substantially right angles thereto telescoped into a slot formed in the back of the said weatherstripping by the rib thereof, an inner flange on each seal bent at a comparatively slight angle opposite to the bend of the said outer flange thereof slidably positioned in a slot in the said parting strip, and means secured to the head and sill of the said window frame telescoped in each end of the said parting strip adapted to retain the said parting strip in a window frame with the resilient seals engaged therein in contact with the said window frame so as to admit of a limited horizontal universal movement of the said parting strip and resilient seals with respect to the said window frame, the outer edges of the said weatherstripping being retained in suitable kerfs in the blind and trim stops of the said window frame.

5. In combination, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, frame lining disposed on each side of said parting strip with the inner edge thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of frame lining, an outer flange on each seal bent at an angle less than 45 degrees rearward of the back of the said frame lining, an inner flange on each seal bent at an angle less than 45 degrees on the same side of the said resilient seal as the said bend of the outer flange thereof slidably positioned in a slot in the said parting strip.

6. In combination, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, frame lining disposed on each side of said parting strip with the inner edges thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of frame lining, an outer flange on each seal bent at an angle less than 45 degrees rearward of the back of the said frame lining, an inner flange on each seal bent at an angle less than 45 degrees on the same side of the said resilient seal as the said bend of the outer flange thereof slidably positioned in a slot in the said parting strip, and means for mounting the said parting strip in a window frame with the resilient seals engaged therein in contact with the said window frame so as to admit of a limited horizontal universal movement of the said parting strip and resilient seals with respect to the said window frame.

7. In combination with a window frame, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, a frame lining disposed on each side of said parting strip with the inner edges thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of frame lining, an outer flange on each seal bent at an angle less than 45 degrees rearward of the back of the said frame lining, an inner flange on each seal bent at an angle less than 45 degrees on the same side of the said resilient seal as the said bend of the outer flange thereof slidably positioned in a slot in the said parting strip, and means for mounting the said parting strip in a window frame with the resilient seals engaged therein in contact with the said window frame so as to admit of a limited horizontal universal movement of the said parting strip and resilient seals with respect to the said window frame, the outer edges of the said frame lining being retained in suitable kerfs in the blind and trim stops of the said window frame.

8. In combination with a window frame, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, frame lining disposed on each side of said parting strip with the inner edges thereof slidably positioned in the slots in the said parting strip, a resilient seal provided with each piece of frame lining, an outer flange on each seal bent at an angle less than 45 degrees rearward of the back of the said frame lining, an inner flange on each seal bent at an angle less thn 45 degrees on the same side of the said resilient seal as the said bend of the outer flange thereof slidably positioned in a slot in the said parting strip, and means secured to the head and sill of the said window frame telescoped in each end of the said parting strip adapted to retain the said parting strip in a window frame with the resilient seals engaged therein in contact with the said window frame so as to admit of a limited horizontal universal movement of the said parting strip and resilient seals with respect to the said window frame, the outer edges of the said frame lining being retained in suitable kerfs in the blind and trim stops of the said window frame.

9. In combination, a parting strip having a pair of longitudinal outwardly disposed slots formed therein adjacent the base thereof, means for mounting the said parting strip in a window frame between sash hung therein whereby to admit of a limited horizontal universal movement of said parting strip with respect to the said window frame, metal liner means against which the edges of the said sash ride when being raised or lowered, and resilient means engaged in said slots in said parting strip located between said window frame and said metal liner means adapted to bear against the said window frame and urge the said parting strip and metal liner means outwardly from said window frame and the liner means against the edges of the said sash.

FREDERICK J. ROBINSON.