United States Patent [19]

Cribben

[11] **3,893,261**

[45] **July 8, 1975**

[54] **WINDOW SAFETY LATCH**

[75] Inventor: **James T. Cribben,** Mechanicsburg, Pa.

[73] Assignee: **Capitol Products Corporation,** Mechanicsburg, Pa.

[22] Filed: **Jan. 2, 1974**

[21] Appl. No.: **429,732**

[52] **U.S. Cl.** **49/449;** 292/128; 292/DIG. 46

[51] **Int. Cl.** **E05d 13/04**

[58] **Field of Search** 49/449, 450; 292/116, 292/DIG. 46, 120, 128

[56] **References Cited**

UNITED STATES PATENTS

272,360	2/1882	Warren	292/116 X
3,161,923	12/1964	Crain	49/449 X
3,220,759	11/1965	Miller	49/450 X
3,808,742	5/1974	Ehret et al.	49/449 X

FOREIGN PATENTS OR APPLICATIONS

956,998	4/1964	United Kingdom	49/449

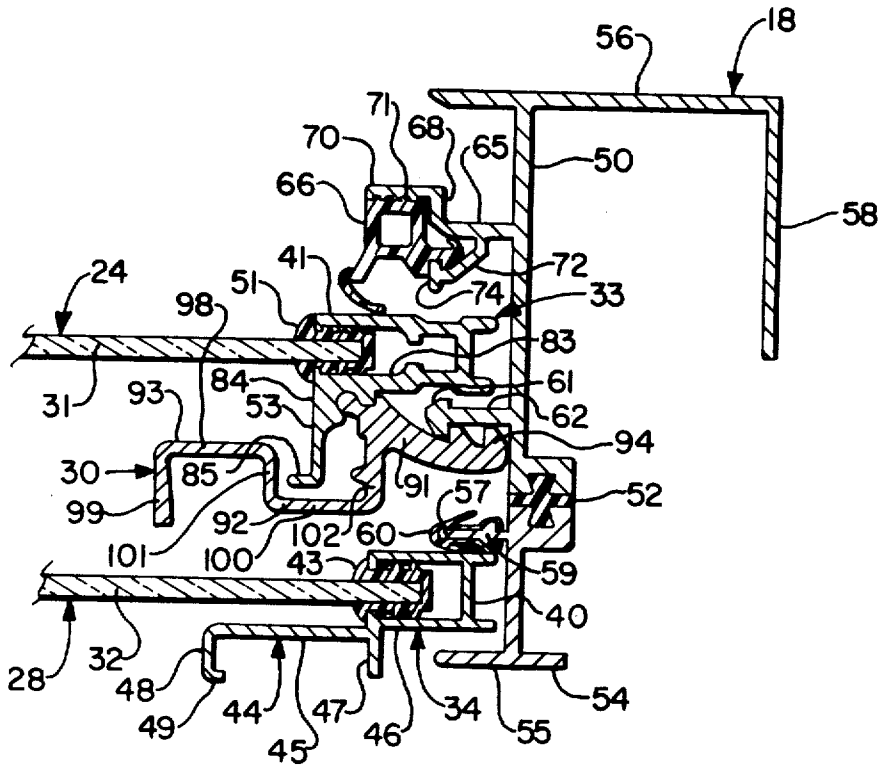
Primary Examiner—Kenneth Downey

Attorney, Agent, or Firm—Donald L. Johnson; John F. Sieberth; Paul H. Leonard

[57] **ABSTRACT**

A safety latch for windows, especially rolling or sliding windows, comprising a pull handle integrally formed with the latch and a double catch for providing improved secure closing of a window sash attached thereto.

10 Claims, 6 Drawing Figures



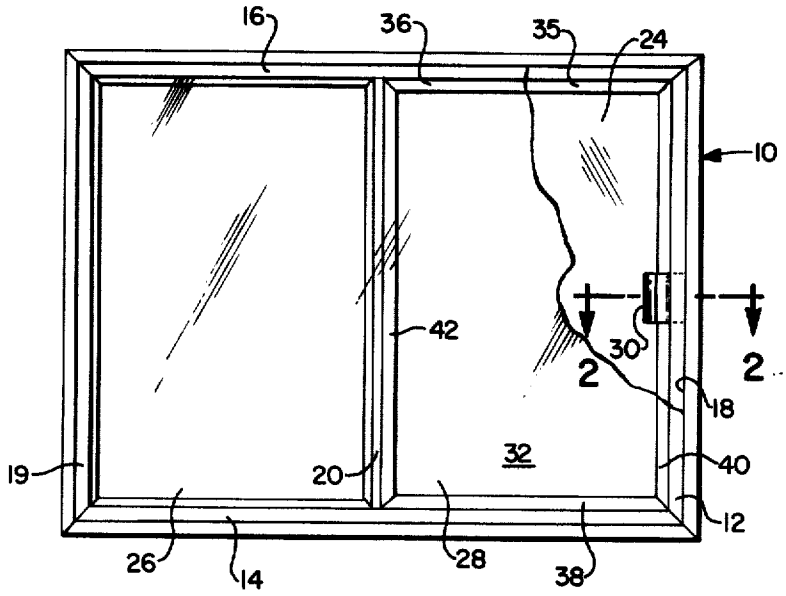

16
36
35
24
10
42
30
2
2
18
19
20
32
40
12
26
14
28
38

FIG. 1.

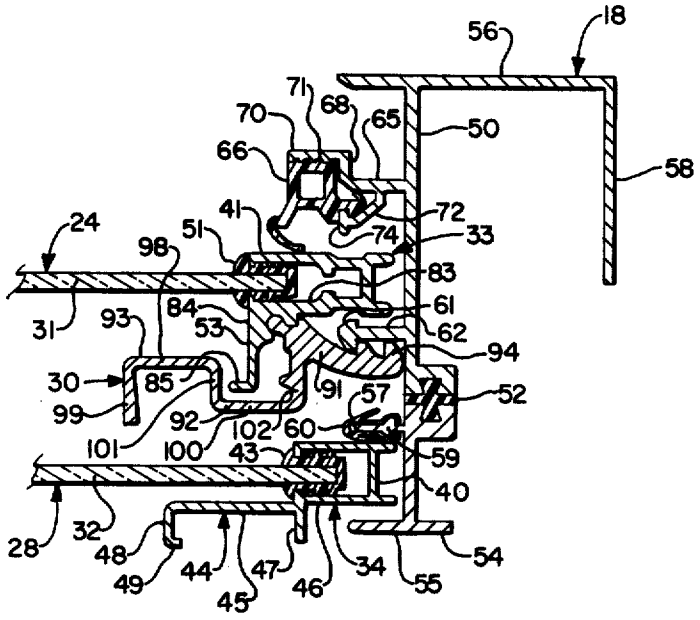

56
18
71
68
65
70
50
66
58
41
72
24
51
74
33
98
83
31
84
61
93
53
62
94
30
85
91
57
52
99
92
102
60
101
100
43
59
40
28
32
48
54
49
44
47
46
34
55
45

FIG. 2.

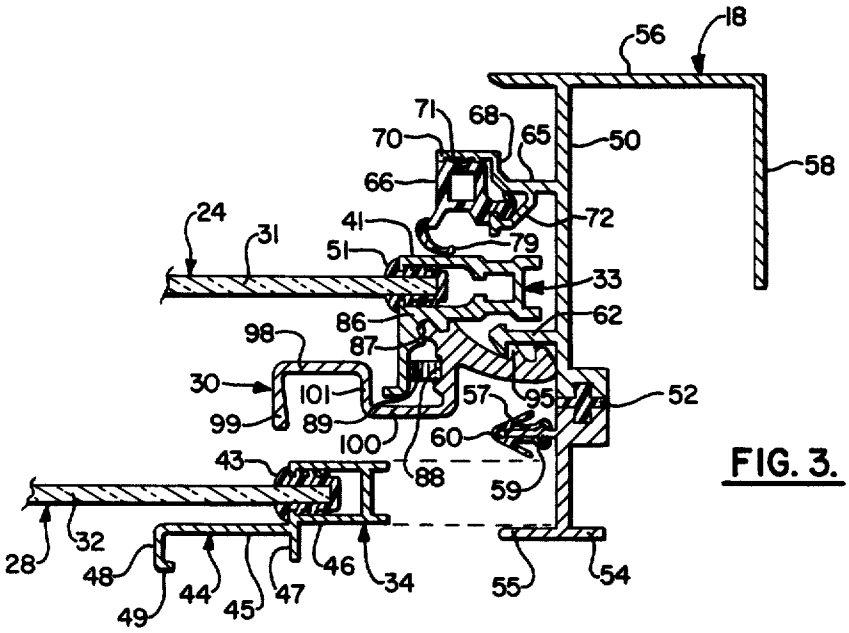


FIG. 3.

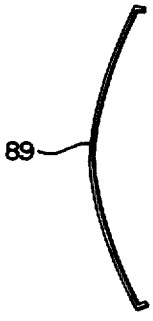


FIG. 6.

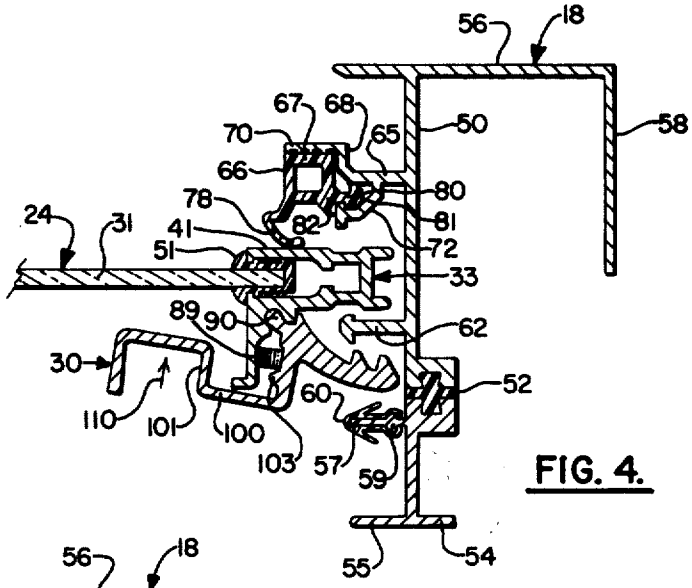


FIG. 4.

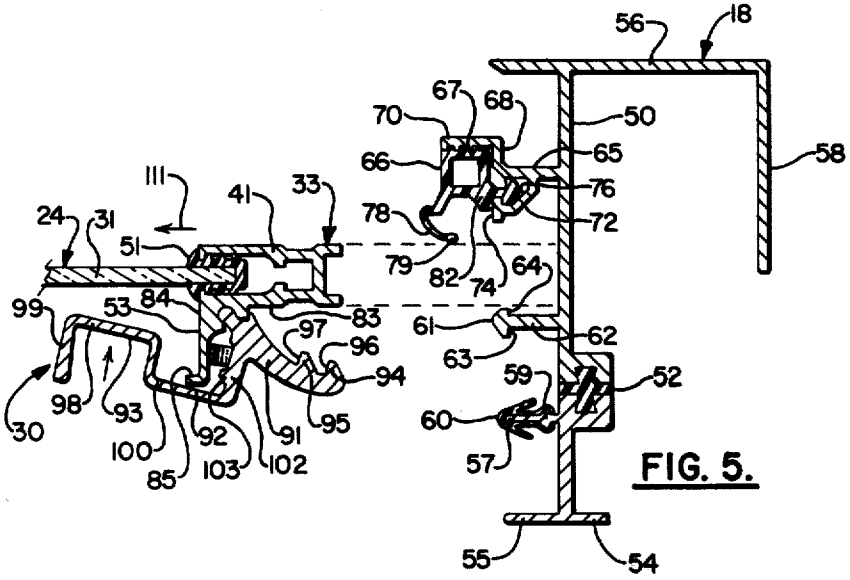


FIG. 5.

WINDOW SAFETY LATCH

BACKGROUND OF THE INVENTION

The present invention relates generally to the window art and more specifically to new and useful improvements in a latch mechanism for horizontal rolling or sliding window sash constructions.

There are a variety of prior art window constructions of the horizontal or lateral type which serve to provide in a window opening one or more fixed sashes in combination with one or more horizontally operable or movable sashes which slide or roll in parallel relationship with the fixed sash components. There are a number of features of construction in these prior art structures which are disadvantageous for various reasons.

Prior art latch constructions are usually complex and expensive structures. They are often unsightly and difficult to operate. They also often fail to provide adequate security.

U.S. Pat. No. **3,078,524** to Minick is illustrative of one particular type of prior art latch which has met with some degree of commercial success. Other prior art latches for sliding windows, etc. are illustrated by U.S. Pat. Nos. **3,660,936; 3,535,823; 3,490,176; 3,440,768; 3,280,511** and **2,830,843.**

It is a primary object of the present invention to provide a novel double catch, combination safety latch and pull handle.

It is another object of the invention to provide a new and improved latch which is simply constructed and easy to operate, whereby the pull handle is integrally formed with the latch. Such construction eliminates the necessity of having a pull handle extruded into a moving sash jamb stile.

Since windows, although being perfectly made, are often installed out of square, the unique double latch feature of the instant invention not only provides a latch which is effective in such faulty installation, but also provides extra security.

Further objects and advantages of the present invention will become more readily apparent to those skilled in the art upon reading the detailed description hereinafter and the accompanying drawings.

SUMMARY OF THE INVENTION

The present invention relates to a new and improved latch for rolling or sliding windows, especially metal or aluminum extruded windows. The latch comprises a pull handle integrally formed therewith and a double catch system for providing enhanced security.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front or inside elevation of a storm window unit employing the novel latch of this invention;

FIG. **2** is a partial horizontal section along line **2—2** illustrating the latch in a closed or locking position, but with the latch spring removed;

FIG. **3** is a view similar to FIG. **2** with the latch spring in place and illustrates the removal of a storm sash from the window;

FIG. **4** is a view similar to FIG. **3,** but illustrates the latch in an open position and the storm sash completely removed from the window;

FIG. **5** is a view similar to FIG. **3,** and illustrates the latch in an open position and the removal of the window panel on which the sash is mounted; and

FIG. **6** is a side view of the latch spring.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention relates to a window construction of the type including one or more fixed sash panels and one or more horizontally sliding sash panels all contained and supported within a frame in which all component sections (head, sill and stile) are formed from a common one-piece structural member. In this window unit, the glazing or the fixed and sliding panels is secure and weathertight. The movable panels are provided with a latch member serving as a functional hand grip for moving the sliding panels horizontally of the frame relative to the fixed panels and automatically operating to lock the movable panel in its closed position.

In the descriptions hereinafter and in the accompanying drawings, for purposes of illustration, the concepts of the present invention are exemplary disclosed in the form of a double panelled window with one panel fixed and one panel movable or slidable. The invention is equally applicable to windows having a plurality of panels, both fixed and movable, and in a variety of cooperative relationships one to the other. It is neither intended nor contemplated that the scope of this invention be limited in any way whatsoever.

Referring now to the drawings and more particularly to FIG. **1,** the numeral **10** designates, generally, a window or window unit constructed in accordance with the instant invention. The window **10** includes a frame **12** for installation directly in a window opening. The frame **12** comprises a sill member **14,** a header **16,** and interconnecting side bars, a right hand vent jamb **18** and a left hand vent jamb **19.** The sill and header are interconnected vertically intermediate the length of the frame by a center bar or meeting rail **20** defining within the frame two like openings on either side thereof. Each of said openings is closed by a glazed panel, one fixed **22** (not seen) and one slidable **24.** In addition, the opening in front of the fixed panel **22** is provided with a removable storm sash **26** enclosing one side thereof within the frame component. The opening in front of the sliding panel **24** is also provided with a removable storm sash **28** which encloses one side thereof within the frame component.

In installation in a light opening, the window construction of the present invention is preferably installed so that the storm sashes **26** and **28** are interiorily hung. FIG. **1** shows the window as viewed from a normally indoor side.

Sliding sash **24** is equipped with a safety latch **30** which can be seen in more detail in FIGS. **2–5.** In the various views, like numerals represent the same parts throughout.

In FIG. **2,** the latch **30** is illustrated in its locked position, with the storm sash **28** in position in the window frame. The storm sash **28** must be slid sideways or horizontally from in front of the latch **30** before the latch can be operated. In FIG. **3,** it is readily seen that the panel **28** is slid to the left in a track in the window frame thereby exposing the latch **30** for operation. For ease in installation of sash, the head track is twich as deep as the sill track.

The storm sash **28** is constructed in the normal manner, wherein a glazed panel **32** is mounted in a frame **34** comprising a top rail **36** and a bottom rail **38** joined together by a jamb stile **40** and an interlock stile **42.** A

resilient continuous strip **43** of vinyl or other suitable material, somewhat U-shaped, is provided for receiving and engaging a continuous marginal edge portion of the glazed panel **32**. The jamb stile **40** is provided with a finger rail **44** which takes the form of an extension **45** of the front side **46** of the stile **40** and a pair of spaced apart flanges **47** and **48**. Flange **47** is perpendicular to the extension **45** and flange **48** extends at a right angle therefrom. Flange **48** has a relatively short flange **49** thereon and perpendicular thereto. The flange **49** is also substantially parallel to the extension **45**. The finger rail **44** enables the panel **28** to be readily slide away from the jamb **18** as seen in FIG. **3**.

The jamb **18** is an elongated extruded structural member and comprises a flat web **50** extending transversely of the width of the structural member throughout its longitudinal length and having a thermal break **52** therein. One longitudinal edge of the web **50** is provided with a flange **54** perpendicular thereto. The other longitudinal edge of the web **50** is also provided with a flange **56** also perpendicular thereto. One end of the flange **56** has a flange **58** extending at a right angle therefrom parallel to the web **50** and toward the flange **54**. One end **55** of the flange **54** provides one side of a track for receiving the jamb stile **40** of the storm sash **28**. A flange **57** extends perpendicularly from the web **50** between the thermal break **52** and the flange **54** and parallel to the end **55** of the flange **54** and provides the other side of the track for receiving the jamb stile **40**. The flange or projecting **57** has an enlarged portion **59** thereon enabling a resilient insulating member **60** to be positioned thereon. When the stile **40** is mounted in the jamb **18**, the insulating member **60** exerts sufficient pressure on one side of the stile **40** to hold the panel **28** firmly in the window track.

As best seen in FIGS. **2** and **5**, the web **50** of the jamb **18** has a flange or projection **62** extending perpendicularly therefrom between the thermal break **52** and the end flange **56**. The flange **62** has an enlarged portion **61** on the end thereof which has a meeting surface **63** for engaging the catch mechanism of the latch **30**, which will be described more fully hereinafter, and a meeting surface **64** for engaging the locking stile **41** of the panel **24**, also which will be explained in more detail hereinafter. Between the projection **62** and end flange **56**, the web **50** has a perpendicular member **65** extending therefrom which has a resilient member **66** mounted therein for making pressure contact with the locking stile of the slidable panel **24**.

The perpendicular member **65** has a right angle member **68** on the end thereof which has a flange **70** extending at a right angle therefrom and parallel to the perpendicular member **65**. The flange **70** has a plurality of notches or grooves **71** extending longitudinally therein. Extending perpendicularly from the perpendicular member **65** and intermediate of the right angle member **68** and web **50** then outwardly away from the web **50** and then parallel to the member **65**, is a member **72**. The member **72** has a flange **74** on the end thereof which extends at right angles on each side thereof and is parallel and in line with the member **68**. The member **65** and member **72** provide an opening or channel **76** for receiving a portion of the resilient member **66**.

The resilient member **66** is an elongated rectangular tubular member one side **67** thereof which is notched or channeled so as to be received by the notches **71** of the member **70**. On the opposite side of the resilient member **66** a foot member **78** extends outwardly from one end thereof and a projection member **80** extends laterally therefrom. The projection member **80** has an enlarged portion **81** on the end thereof which is adapted to be inserted in the opening **76**. One side of the underside of the projection member **80** is adjacent the upper inside surface of the flange **74**. Another member **82** extends at a right angle from the member **80** and has a surface thereon adapted to fit against a portion of the exterior surface of the flange **74**. The foot member **78** is of a somewhat sickle shape configuration in cross-section with the "sickle" extending toward the web **50**. A knob or enlarged portion **79** is formed on the end of the "sickle" **78**.

The sliding panel **24** is somewhat similarly constructed to the storm panel **28**, but has a locking stile **41** in lieu of a jamb stile. A glazed panel **31** is mounted in a frame **33** comprising a top rail **35** (FIG. **1**) and a bottom rail **37** (not seen) joined together by a lock stile **41** and a meeting stile **39** (not seen). A continuous resilient strip **51** of vinyl or other suitable material, somewhat U-shaped, is provided for receiving and engaging a continuous marginal edge portion of the glazed panel **31**.

The lock stile **41** of the frame **33** is provided with a locking rail **53** which is so constructed as to receive the latch **30**. The locking rail **53** is somewhat L shaped with one leg **83** extending substantially parallel to the panel **31** and provides one side of the opening for receiving the panel **31** and the continuous resilient strip **51**. The other leg **84** of the rail **53** extends perpendicularly from the leg **83** and panel **31**. A portion of the leg **84** extends outwardly perpendicularly away from the leg **84** to form a foot member **85**. The foot member **85** serves as a stop when the latch **30** is moved from a closed to an open position as best seen in FIGS. **4** and **5**. The rail **53** has an enlarged portion **86** where the legs **83** and **84** meet which has a rounded channel **87** therein for receiving a rounded member **90** of the latch **30**. The member **90** serves as a hinge and provides the pivot point for the latch **30** to be moved from opening to closing position and vice versa.

The lock stile **41**, as well as the various rails, stiles, jambs, headers and sills, are preferably extruded metal shapes, with aluminum being the preferred metal. The term aluminum includes aluminum and aluminum alloys used in the making of windows and doors. The locking rail **53** of the lock stile **41** provides the seat for the latch **30** which is mounted therein at a central position as best seen in FIG. **1**.

The latch **30** is also an extruded aluminum shape and in cross-section, has a latching member **91** extending outwardly from the hinge **90** and a "U-shaped" web **92** also extending therefrom. A handle **93** is joined to the web **92**. The latching member **91** is of somewhat thicker or heavier construction than the web **92** and handle **93**. On one end of the latching member **91** is formed a catch **94**. A second catch **95** is formed on the member **91** on an intermediate position thereon and substantially parallel to the catch **94**. The internal surfaces **96** and **97** of the catches **94** and **95**, respectively, are so constructed or adapted to engage the meeting surface **63** on the enlarged portion **61** of the flange or projection **62** on the web **50** of the vent jamb **18**.

When the latch **30** is in a closed position, as seen in FIGS. **2** and **3**, the intermediate catch **95** is adjacent the

meeting surface **63.** The latching member **91** is of such length that the end of the catch **94** extends to the web **50.** The double catch feature provides a more secure method of fixing a movable sash in a closed position.

The handle **93** has a member **98** which joins the handle to the web **92** and is substantially parallel to the panel **24** when the latch **30** is in a locked position. Another member **99** extends outwardly and perpendicularly from the member **98.** The members **98** and **99** form the pull rail area of the latch **30.**

The "U-shaped" web **92** comprises the base member **100** and legs **101** and **102** on each end thereof extending perpendicularly therefrom. The leg **101** connects the base member **100** with the handle member **98** and the leg **102** joins said base member with latching member **91.** The leg **102** is somewhat thicker than the leg **101** to provide additional strength in the safety latch **30.** A projection or stop **103** is also integrally formed on the leg **102** and faces the locking rail **53.** The projection **103** serves as a stop to prevent the handle **93** from being pushed inwardly toward the glass panel **31** further than desired.

The latch structure or mechanism is completed by a flat bow spring **89** (FIG. 6) which is positioned longitudinally in a channel or groove **88** on the internal surface of the leg **102,** with both ends of the spring freely engaging the top and bottom of the handle at points just above and below the respective ends of the channel. The spring **89** has been omitted from FIG. **2** of the drawings in order that the channel **88** may be more clearly seen. The spring is readily seen in FIGS. **3–5.** The spring is of such length that in its normally installed position it is slightly flexed so that the ends thereof rest on the top and bottom of the handle just above and below the channel **88.** In FIG. **3,** with the latch in a closed position, the spring is of such configuration, that the bow thereof is in pressure contact with the leg **84** of the rail **53.** This pressure keeps the latch closed until the handle **30** is moved in the direction of the arrow **110** as indicated in FIG. **4.** When the latch is in an open position as seen in FIGS. **4** and **5,** additional pressure is exerted against the center portion or bow of the spring and the spring is accordingly lengthened, the ends thereof moving away from contact with the top and bottom of the handle. The configuration of the spring **89** is such that the bowed portion thereof projects outwardly of the channel **88** toward the leg **84** of the rail **53.**

In FIG. **2,** the panels **24** and **28** are in a closed position, with the latch **30** in a locked position. To reach the latch **30,** to open the panel **24,** the sash **28** is slidably moved away from the vent jamb **18** (as seen in FIG. **3**) a sufficient distance to expose the latch **30.** Once the latch **30** is exposed, the latch is opened by applying pressure in the direction of the arrow **110.** In FIG. **4,** the latch **30** has been opened. As seen in FIG. **5,** the panel **24** has been moved away from the jamb **18** by applying pressure on the handle **93** in the direction of the arrow **111.**

The novel latch of the present invention, not only provides increased security, but with the handle incorporated directly into the latch, eliminates the necessity of having a pull stile extruded into the moving sash jamb stile.

Removal of the storm sash is identical to that of the prime sash. The head track is over twice as deep as the sill track so that the sash can be lifted high enough to clear the sill to remove it, but yet be retained in the tracks during normal sideways sliding of the storm sash.

A vinyl track in each the head and sill tracks serves as seal on rails and provides low friction sliding.

The foregoing disclosure and description of the invention is illustrative and explanatory thereof and various changes in the size, shape and materials, as well as in the details of the illustrated construction, may be made within the scope of the appended claims without departing from the spirit of the invention.

What is claimed is:

1. A unitary extruded aluminum shape safety latch for sliding windows comprising a rounded hinge member; a latching member extending outwardly therefrom; a U-shaped web extending downwardly therefrom; a pull handle extending outwardly from said web and away from said latching member, and a catch on the end of said latching member; and U-shaped web comprising a base member, a leg extending from one end thereof joining said latching member and said rounded hinge member, and another leg extending from the other end of said base member and joining said pull handle; and, said leg of said U-shaped member, which joins said latching member and said rounded hinge member, having a channel formed on the internal surface thereof adapted to receive a flat bow spring.

2. The safety latch of claim **1,** wherein said latching member has a second catch integrally formed therewith and adjacent to said first named catch.

3. The safety latch of claim **1** including a flat bow spring and means on said U-shaped web for engaging and retaining said spring thereon.

4. The safety latch of claim **1,** wherein said pull handle comprises a member extending outwardly from said another leg of said U-shaped web and a member extending outwardly away from and substantially at a right angle to said first named member.

5. A latching mechanism for sliding windows, comprising a unitary safety latch, a flat bow spring and a lock stile adapted to receive said safety latch; said safety latch comprising a rounded hinge member; a latching member extending outwardly therefrom; a U-shaped web extending downwardly therefrom; a pull handle extending outwardly from said web and away from said latching member; and a catch on the end of said latching member; said U-shaped web comprising a base member, a leg extending from one end thereof joining said latching member and said rounded hinge member, and another leg extending from the other end of said base member and joining said pull handle; said leg of said U-shaped member, which joins said latching member and said rounded hinge member, having a channel formed on the internal surface thereof adapted to receive a flat bow spring; said rounded hinge member being adapted to be pivotally received by a rounded channel therefor on said lock stile; rounded channel means on said lock stile for pivotally receiving said rounded hinge member; and, means on said safety latch for engaging and retaining said spring and said spring being positioned on said latch so as to be between said latch and said locking stile, whereby when said handle of said latch is moved inwardly, pressure is applied on said spring tending to cause it to move towards a flattened position.

6. The latching mechanism of claim **5,** wherein said latching member has a second catch integrally formed therewith and adjacent to said first named catch.

7. The latching mechanism of claim 5, including a window jamb and projection means on said jamb for engaging said catch of said latching member.

8. The latching mechanism of claim 7, wherein said pull handle comprises a member extending outwardly from said another leg of said U-shaped web and a member extending outwardly away from and substantially at a right angle to said first named member.

9. In a window construction, a rectangular window frame, a window sash slidably mounted in said window frame between open and closed position, and latch means associated with a frame element of said window frame and an adjacent frame element of said window sash in the closed position of said window sash for normally retaining said window sash against movement from closed to open position; said latch means including, a projection member in said window frame element defining a catch surface perpendicular to the path of sliding movement of said window sash, a unitary safety latch, a lock stile on said window sash for retaining said safety latch, and a spring means on said safety latch for maintaining said safety latch in engaging position on said projection member; said unitary safety latch comprising a rounded hinge member, a latching member extending outwardly therefrom, a U-shaped web extending downwardly therefrom, a pull handle extending outwardly from said web and away from said latching member, and a catch on the end of said latching member; said U-shaped web comprising a base member, a leg extending from one end thereof joining said latching member and said rounded hinge member, and another leg extending from the other end of said base member and joining said pull handle; said leg of said U-shaped member, which joins said latching member and said rounded hinge member, having a channel formed on the internal surface thereof adapted to receive said spring means; said rounded hinge member being adapted to be received by a rounded channel therefor on said lock stile; and, said lock stile having a rounded channel therein for pivotally receiving said rounded hinge member.

10. The window construction of claim 9, wherein said spring means comprises a flat bow spring and means on said U-shaped web for engaging and retaining said spring thereon.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,893,261

DATED : July 8, 1975

INVENTOR(S) : James T. Cribben

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 10, "or" should read -- of -- . Column 2, line 63, "twich" should read -- twice -- . Column 3, line 12, "slide" should read -- slid -- . Column 3, line 30, "projecting 57" should read -- projection 57 -- . Column 6, line 18, "and U-shaped" should read -- said U-shaped -- . Column 7, line 4, "Claim 7" should read -- Claim 5 -- .

Signed and Sealed this

twenty-eight Day of *October 1975*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks