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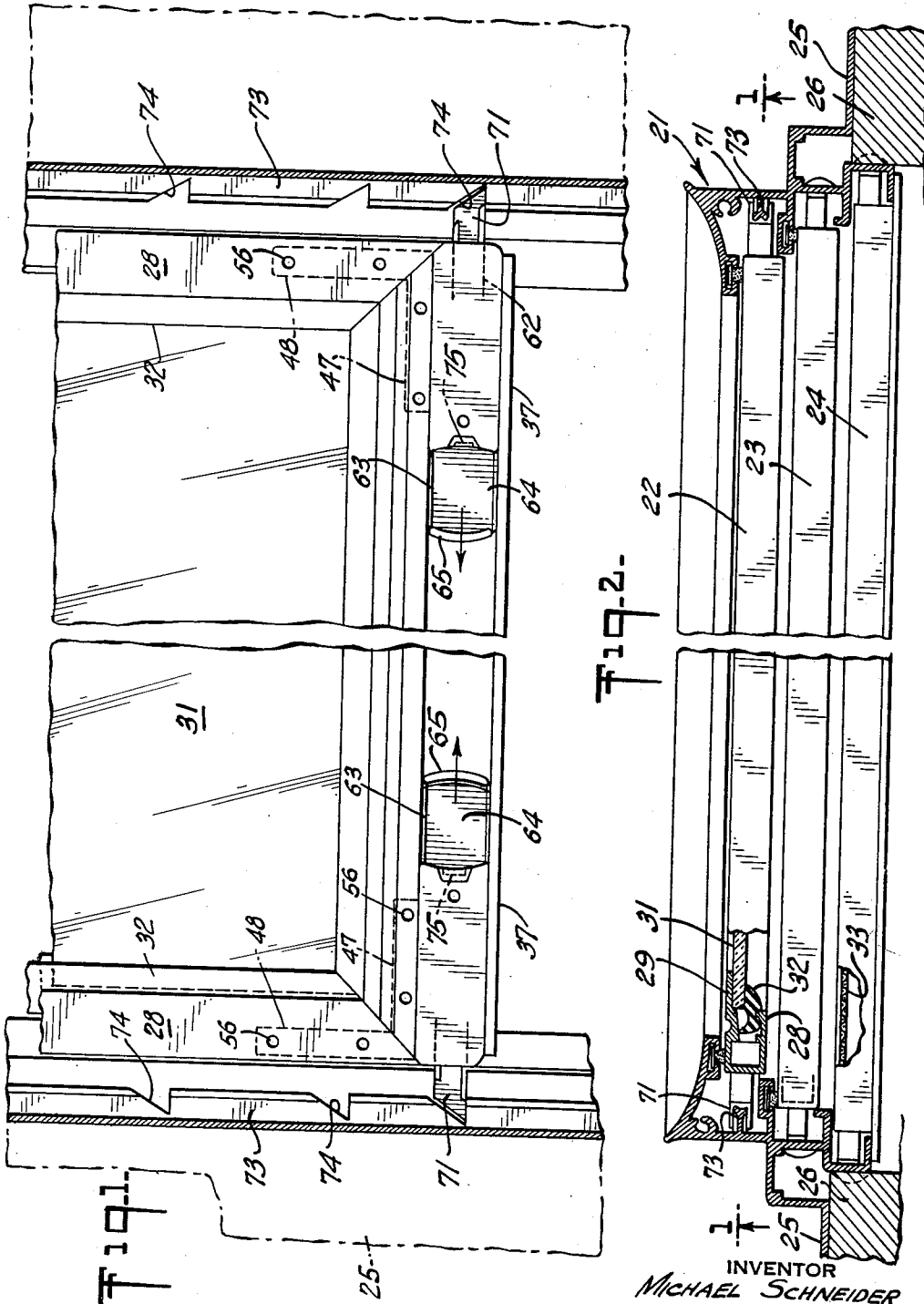
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3,129,470

WINDOW SASH LATCH CONSTRUCTION

Filed Nov. 14, 1960

3 Sheets-Sheet 1



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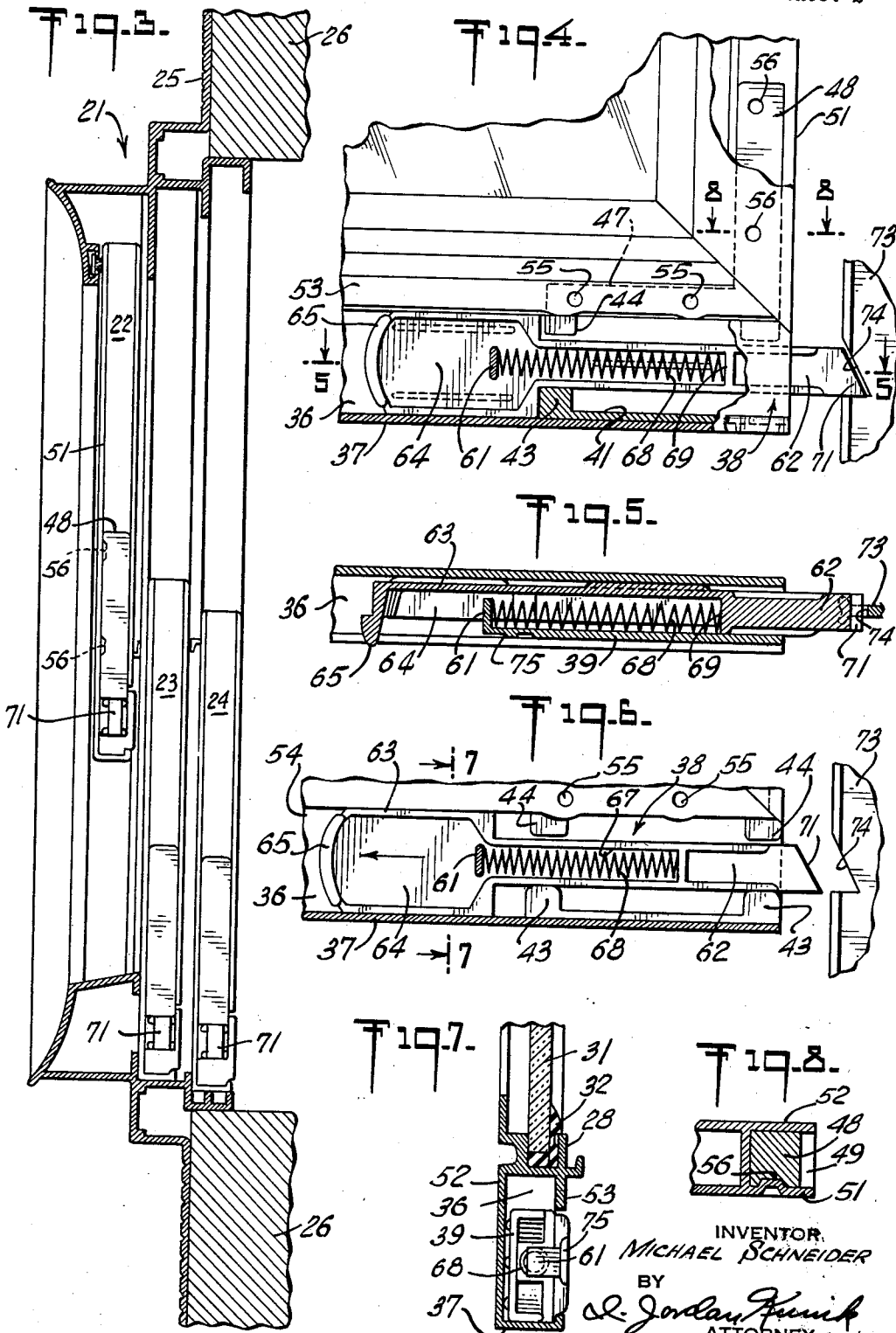
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WINDOW SASH LATCH CONSTRUCTION

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3 Sheets-Sheet 2



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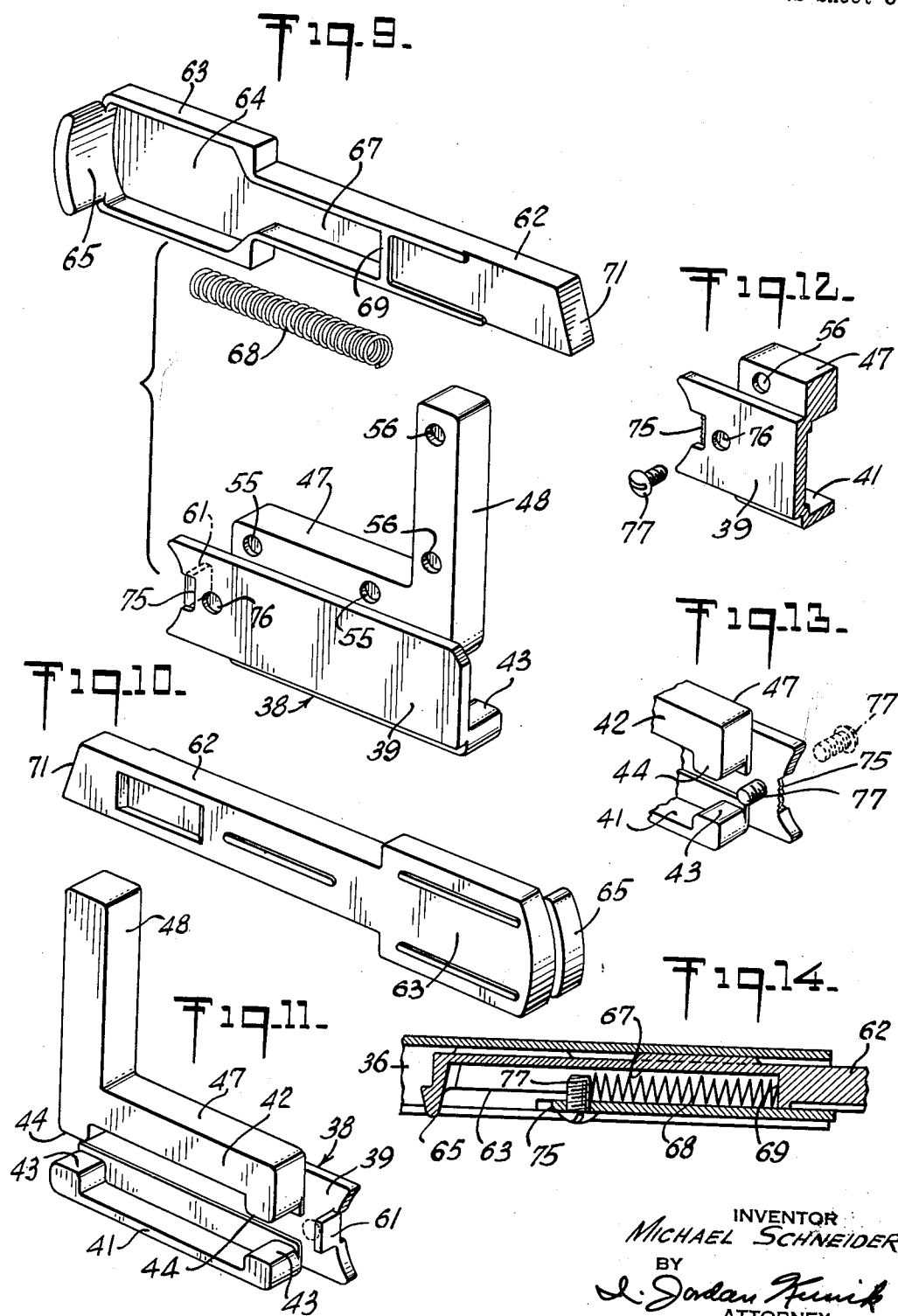
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WINDOW SASH LATCH CONSTRUCTION

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3 Sheets-Sheet 3



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WINDOW SASH LATCH CONSTRUCTION

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4 Claims. (Cl. 20-52)

This invention relates to windows, and more particularly to improved means for releasably securing sash frames within master frames in different positions.

The salient features of the present invention constitute the provision of a novel spring actuated latch construction for a window sash which cooperates with a corresponding master frame structure for setting the sash frame at different desired levels relative to said master frame. Furthermore, since the retractable latching element is actuated by a captive spring within an enclosed housing, which spring may fail for various reasons such as fatigue or corrosion, means are provided for breaking open said housing in order to replace a new spring and to provide for a substitute retainer for said spring in order to revive the function of the latch with the least possible trouble or inconvenience. Concomitantly, should the latch handle fracture, or any part of it become defective, the breakable means also permits the facile replacement of a new latching element without the necessity of replacing its housing or removing the window frame from its normal position.

Still other objects and advantages of the invention will be apparent from the specification.

The features of novelty which are believed to be characteristic of the invention are set forth herein and will best be understood, both as to their fundamental principles and as to their particular embodiments, by reference to the specification and accompanying drawings, in which:

FIGURE 1 is a front view, partly in outline, partly broken away and partly in section, of a portion of a master frame and a sash frame showing one aspect of the latching element structure, said view being taken approximately on line 1-1 of FIGURE 2;

FIG. 2 is a horizontal section view showing a complete assembly of a double hung window sash frame and screen sash frame positioned within a master frame;

FIG. 3 is a vertical section view of the embodiment shown in FIGS. 1 and 2;

FIG. 4 is a greatly enlarged, fragmentary view of a window sash frame showing the locking mechanism in latching position, some parts being broken away and some parts being shown in elevation;

FIG. 5 is a section view, taken on line 5-5 of FIG. 4;

FIG. 6 is similar to FIG. 4, showing the latching mechanism retracted;

FIG. 7 is a section view, taken on line 7-7 of FIG. 6;

FIG. 8 is a view taken on line 8-8 of FIG. 4;

FIG. 9 is an enlarged, exploded view of the component parts of the latching element together with the means for securing said element to the window sash frame;

FIG. 10 is a rear view of one of the elements shown in FIG. 9;

FIG. 11 is a rear view of another of the elements shown in FIG. 9;

FIG. 12 is a fragmentary view of a portion of a latching element showing the manner in which the spring retaining tab has been broken away, and illustrating the cooperation of a replacement screw;

FIG. 13 is a rear view of the element shown in FIG. 12, with the replacement retaining screw in position, and

FIG. 14 is a view similar to FIG. 5, showing the manner in which the replacement spring retaining screw is utilized.

Referring now to the drawings in detail, and particularly to FIGS. 1 and 2, there is shown a master frame,

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generally designated 21, which is formed of extruded aluminum having a complex cross-section for the accommodation of a pair of window sash frames 22 and 23, and a screen sash frame 24 in a substantially parallel array. Master frame 21 has a peripheral flange 25 for mounting said frame by means of screws or the like, not shown, upon the framework 26 of a window opening.

Rectangular sash frame 23, made of extruded aluminum or the like, has a pair of inwardly extending spaced apart panels 28 and 29. A glass window pane 31 is held against panel 29 by means of a strip 32 of resilient plastic material, such as vinyl rubber, or the like, said strip forming a wedge between said window and panel 28. Strip 32 extends around the four sides of window pane 31 and effectively forms a liquid and airtight seal between said pane and sash frame 22. These means for securing the window pane 31 in sash frame 22 are also utilized for securing a window pane in sash frame 23 and a mesh screen 33 in screen sash frame 24, although not illustrated in FIG. 2. In the following description of the manner in which sash frame 22 is suspended and locked within master frame 21, it will be understood that the same structural means are utilized for the suspension and locking arrangements for sash frames 23 and 24.

The bottom of each sash frame 22, 23 and 24 has a horizontal channel 36 (FIGS. 1, 4-7), the bottom of which is bounded by a horizontal ledge 37. Each end of said channel accommodates a latch housing element, generally designated 38. (FIGS. 1, 9 and 11.) Each housing 38 which may be made of a single zinc or aluminum die casting, comprises a front panel 39, an integral, bottom wall 41, and an integral top wall 42. Bottom wall 41 and top wall 42 are each provided with an opposing pair of spaced apart bosses 43 and 44, respectively, which serve as the runner guides for the latching element. Formed integrally with top wall 42 is the horizontal leg 47 of an L-shaped lug having an integrally formed vertical leg 48. Leg 48 is positioned within a vertical channel 49, said channel being formed of a pair of spaced apart panels 51 and 52 at the edge of the window sash frame. (FIGS. 1, 4 and 8.)

When housing 38 is positioned within channel 36 with the rear surfaces of bottom wall 41 and upper wall 42 in contact with the inner surface of rear wall 52 of said channel, leg 47 is positioned behind horizontal panel 53 overhanging the upper front portion of channel 36.

The front surfaces of legs 47 and 48 each have one or more spaced apart depressions 55 and 56, respectively. After said legs and, accordingly, housing 38, are placed in position relative to the window sash frame, panel 51 is struck with a suitable tool to cause portions thereof to become indented into depressions 56 and to secure leg 48 firmly into the channel between panels 51 and 52. The same procedure is followed with horizontal panel 58 by causing portions thereof to become likewise indented into, and firmly engage, depressions 55 in leg 47 whereby housing 38 is secured in position in the window or screen sash frame.

The inner end of front panel 39 of latch housing 38 extends beyond the end of walls 41 and 42, and has a rearwardly extending tab 61, integrally formed therewith. The plunger of the latching mechanism, which in one embodiment may be made of a zinc die casting or the like, constitutes an elongated latch 62 which is slidably accommodated between runner bosses 43 and 44. Integrally formed with said latch is a widened head 63 which is longitudinally movable within channel 36. Head 63 has a large recess 64 which accommodates the finger or thumb of the operator and has a forwardly extending tab 65 which enables the operator to retract latch 62.

Latch 62 has an elongated recess 67 which accommodates a spring 68, one end of which bears against end

wall 69, and the other end of which bears against tab 61 of front wall 39. Under the normal action of spring 68, the outer end of latch 62 is normally urged outwardly from the side wall of the window sash as shown, for example, in FIGS. 4 and 5. The outer end of latch 62 has a beveled or mitered sawtooth point 71.

Formed integrally upon both interior sides of master frame 21 are vertical ribs 73 (FIGS. 1 to 4 and 6), which are positioned opposite respective side edges of window sash frame 22. Similar ribs, not shown, are formed in master frame 21 opposite the side edges of window sash frame 23 and screen sash frame 24. The inner edge of each rib 73 is substantially parallel to and is spaced apart somewhat from the respective opposing edge of the window sash frame, and has a plurality of spaced apart recesses 74 of sawtooth shape which are adapted to accommodate the outer end 71 of latch 62. Window sash frame 22 is movable vertically within master frame 21 and may be adjusted at any desired height by causing latches 62 to engage a particular pair of recesses 74 in opposite ribs 73, as shown for example in FIG. 1.

By manipulating heads 63 of latches 62 and retracting them inwardly against the action of spring 68 whereby points 71 are withdrawn from recesses 74, window sash frame 22 may be moved upwardly or downwardly as desired within master frame 21. When the window sash frame 22 is then positioned at a desired level within master frame 21, heads 63 of latches 62 are released whereby latch points 71 are urged by spring 68 into corresponding accommodating recesses 74 to fix the window sash frame or the screen sash frame in locked position.

In order to reset window sash frame 22 into a higher position, it may not be necessary to manually manipulate latches 62 since the configuration of the recesses 74, as well as of latch points 71, are such that the sloping co-operation of said recesses and said points will cause said latches to become automatically retracted against the action of spring 68 by the upward force generated by the lifting of window sash frame 22.

In lowering window sash frame 22, however, it is necessary to manipulate heads 63 of latches 62 manually in order to retract latch points 71 from respective recesses 74 in order to permit the descent of said sash.

In some instances it is found that spring 68 may fail for one reason or another, and it may be desired to replace the same. Since spring 68 is captive within recess 67 of latch 62, and behind the front wall 39 of housing 38, and retained by tab 61, it would ordinarily be difficult to replace said spring. In order to provide for simple replacement of a new spring 68, that portion of front wall 39 of housing 38 adjacent said tab has a slight depression, or is scored at, 75 (FIGS. 5, 7 and 9), whereby the juncture between said tab and front wall 39 is rendered somewhat weaker than the rest of the casting, while yet sufficiently strong to enable tab 61 to serve as a firm backstop or retainer for said spring. By virtue of the thinner section at this juncture, tab 61 may be broken away by a simple tool or the like from wall 39 at said juncture point, as is seen in FIGS. 12 and 13, whereby the deteriorated or broken portions of spring 68 may be removed. A new spring may then be inserted, and a substitute backstop or retainer for said spring is provided by inserting into hole 76 a screw or pin 77 against whose shaft one end of spring 68 bears. Hole 76 may be a self-tapping aperture which accommodates the threaded surface of screw 77 and holds its shaft firmly in position to act as a retainer for spring 68 as shown in FIG. 14.

It is claimed:

1. A window construction having a master frame and a sash frame movable within said master frame and comprising a latch housing connected to said sash frame, a retractable latch movable within said housing, a channel

in said latch, a spring captive in said channel, a tab formed integrally with said housing and extending inwardly into said channel, the major portion of said spring being recessed within said channel, one end of said spring engaging said tab, the other end of said spring engaging an inner wall of said channel, said spring normally urging said latch into locking engagement with said master frame, said latch being retractable against the action of said spring for releasing said latch from said master frame and permitting movement of said sash frame within said master frame, a hole in said housing located near said tab, said hole accommodating an insertable element extending into said channel to act as a substitute retainer for said spring when said tab is broken from said housing.

2. A construction according to claim 1, and further comprising a head integrally formed on said latch, a recess in said head coextensive with said channel, said recess being substantially wider than said channel and accommodating the finger or thumb of the operator for retracting said latch.

3. A window construction having a master frame and a sash frame movable within said master frame, and comprising a latch housing connected to said sash frame, a retractable latch movable within said housing, a channel in said latch, a spring in said channel, a tab formed integrally with said housing and extending inwardly into said channel, the major portion of said spring being recessed within said channel, one end of said spring engaging said tab, the other end of said spring engaging an inner wall of said channel, said spring normally urging said latch into locking engagement with said master frame, said latch being retractable against the action of said spring for releasing said latch from said master frame and permitting movement of said sash frame within said master frame, said tab being breakable from said housing for permitting the removal of said spring and the replacement of another spring, and a self-tapping hole in said housing near said tab, said hole being adapted to receive and hold a screw whose shaft extends into said channel to serve as a substitute retainer for the replacement spring.

4. A window construction having a master frame and a sash frame movable within said master frame, and comprising a latch housing connected to said sash frame, a retractable latch movable within said housing, a channel in said latch, a spring in said channel, a tab formed integrally with said housing and extending inwardly into said channel, the major portion of said spring being recessed within said channel, one end of said spring engaging said tab, the other end of said spring engaging an inner wall of said channel, said spring normally urging said latch into locking engagement with said master frame, said latch being retractable against the action of said spring for releasing said latch from said master frame and permitting movement of said sash frame within said master frame, said tab being breakable from said housing for permitting the removal of said spring and the replacement of another spring, and a hole in said housing near said tab, said hole being adapted to receive and hold a pin extending into said channel to serve as a substitute retainer for the replacement spring.

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