Oct. 8, 1940. A. RONNING 2,217,079

WINDOW STAY

Original Filed June 9, 1938

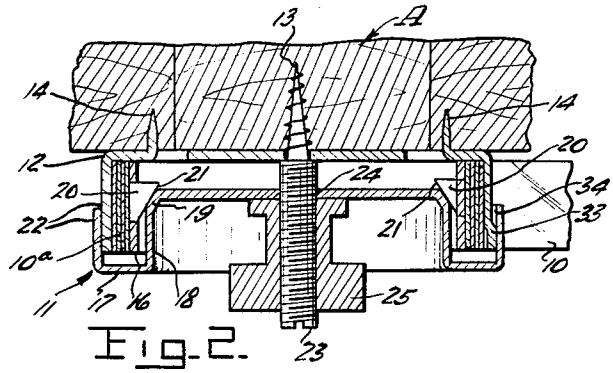

Fig. 2.

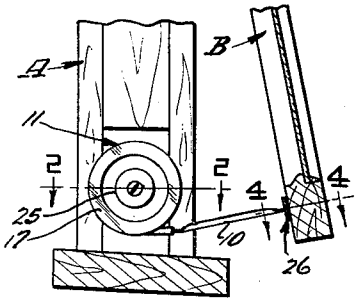

Fig. 1.

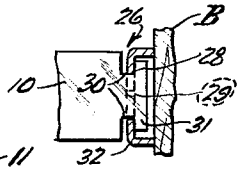

Fig. 4.

Fig. 6.

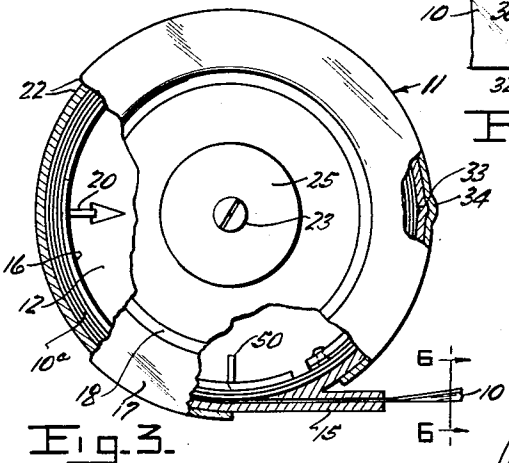

Fig. 3.

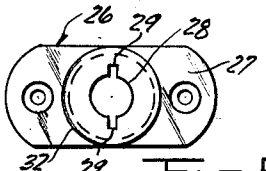

Fig. 5.

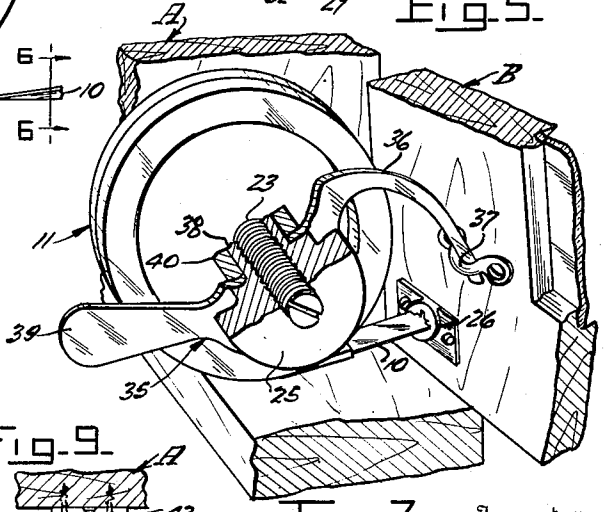

Fig. 7.

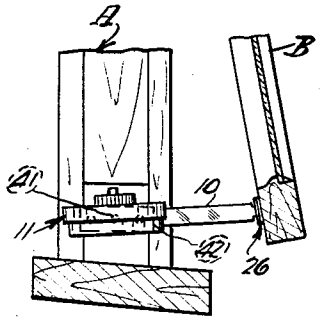

Fig. 8.

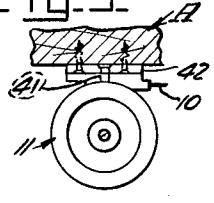

Fig. 9.

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2,217,079

WINDOW STAY

Adolph Ronning, Minneapolis, Minn.

Original application June 9, 1938, Serial No. 212,734. Divided and this application August 14, 1939, Serial No. 289,993

10 Claims. (Cl. 292—262)

This invention relates to improvements in window stays.

In the mounting and use of storm windows and screens of the type which are hinged at their upper ends to the window frame, it is customary to provide some fastening means at their lower ends and, in the case of the storm windows, to provide also some sort of stay means to hold the windows slightly opened at their lower ends when desired. It is the primary object of my invention to provide a combination locking and stay means for such structures and which is of a simple and inexpensive form having numerous advantages over the more common mechanism for the purpose. Another object is to provide a device of this kind which may be readily operated to lock the window in closed position or retain it in partially opened position and which requires no use of tools in order to make connection to either the storm window or screen as they are replaced in the window. A further object is to provide a device of this kind in which the connecting elements fastened on the window screens are of such nature that they form no projection thereon such as would interfere with compact storage and be liable to breakage in storage.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawing, in which—

Fig. 1 is a side elevation, partially in vertical section, showing one type of stay means applied to a window frame and storm window and showing the window in an opened position.

Fig. 2 is an enlarged horizontal section along the line 2—2 in Fig. 1.

Fig. 3 is an elevation, on an enlarged scale, partially broken away and in section, showing the drum and flexible stay member employed in Fig. 1.

Fig. 4 is an enlarged, fragmentary horizontal section along the line 4—4 in Fig. 1.

Fig. 5 is an enlarged face view of the connecting member used for connecting the flexible stay member to the window or screen.

Fig. 6 is a cross section along the line 6—6 in Fig. 3.

Fig. 7 is an enlarged perspective view of the structure shown in Fig. 1 but modified to include a lock for locking the window or screen in closed position.

Fig. 8 is a view similar to Fig. 1 but showing a modified mounting arrangement of the stay means.

Fig. 9 is a plan view of the assembly of Fig. 8, showing a part of the window frame in cross section.

Referring now more particularly and by reference characters to the drawing, A designates a window frame, and B the storm window or screen which are used, the stay means or device constituting my invention. It is to be noted that the term "window frame" as herein employed is to denote the fixed frame in which element B is mounted, and that this latter element may be any swingably mounted structure such as a storm window, casement window, or screen. For convenience sake the element B will be referred to simply as a window, and it will be understood that the window in usual manner is removably and hingedly suspended from the top of the frame A to swing closed at its lower end against the frame. To open the window it is simply pushed outwardly at its lower end as shown in Figs. 1 and 8.

My improved stay means may of course be used at each side of the window, but only a single unit wil be herein shown and described. The actual stay member or supporting element 10 here takes the form of an elongated strip of spring material, such as steel, formed into a concavo-convex cross section or arcuate shape so that it may readily flatten when wound into a coil but will, when extended, have the property of maintaining a straight condition and resisting endwise stresses. This strip is wound or coiled up in a container or carrier 11 which is secured to the inner side of the window frame A and includes a fixed cup-like base 12 secured by means of a screw 13 and punched out teeth 14 to the frame. This base has an extended guideway 15 through which the member or strip 10 may slide in a flattened condition to enter and leave the carrier, and this guideway directs the strip outwardly toward the window B. A parted, expansible brake drum 16 fits within the coil 10a of the strip 10 and normally contracts in order to free this coil so that the strip may be readily pulled out of, or pushed into, the carrier. A cover plate 17 fits over the base 12 and has a central, cup-shaped depression 18 having an inner, annular, and angularly extended edge 19 located within the drum 16. The drum has cam lugs 20 punched inwardly at circumferentially spaced points, and these lugs have angular cam faces 21 which engage the edge 19 of the cover plate 17 so that, by pushing this plate inwardly over the base 12 (guided by the telescoping margins 22) the edge 19 will cam against the lugs 20 to expand the drum 16 and tighten the coil 10a. The strip 10 will thus be

locked against movement, but by releasing the cover plate 17, the brake drum 16 may again contact to free the strip. For thus operating the cover plate 17 I provide a stud 23 which is rigidly extended from the screw 13 through an opening 24 in the cover, and which carries a threaded knob 25 on its outer end to engage the cover (when screwed tight) and press it inwardly into the drum, or to allow the cover to move outwardly when unscrewed.

For releasably connecting the end of the strip 10 to the window B I provide a connecting unit 26 including a base 27 adapted to be screwed to the window and having an aperture 28 with diametrically opposed and radially extended notches 29. The end of the strip 10 is notched as at 30 to form a T-shaped head 31 which may enter the notches 29. The base 27 is so located on the window B that these notches lie at right angles to the normal position of the strip 10 and the strip must, therefore, be twisted on its axis a quarter turn in order to introduce the head 31 through the notches. When released the strip will then return to normal position, and the head will be locked within the base 27 as will be clearly evident. The operation of connecting and disconnecting the strip with respect to the window B (or the screen which, of course, also carries the units 26) is thus readily performed without tools. The base 27 may have its central portion formed out into a boss 32 in order to give clearance space for the head 31 or the base may be fixed flatly to the window and a recess formed in the window beneath the base to give this clearance.

In operation, the knob 25 is normally screwed tight to prevent movement of the strip 10 and the window is then held in adjusted position. However, by loosening this knob the strip is freed and the window B may be moved outwardly or inwardly to any desired position. Then by tightening the knob again the strip will be locked, and will support the window in the adjusted position, as will be understood. The window is, of course, normally provided with one strip 10 and carrier assembly 11 at each side. To change the window B for a screen the strips 10 are simply twisted slightly to free them from the connecting units 26, and are then replaced in the units on the screen. The margins 22 of the base member 12 and cover 17 are provided with a rib 33 and groove 34 to prevent rotation of the cover as the coil 10a moves in the adjustment of the strip 10.

Fig. 7 discloses an assembly identical to that just described, but with means for positively locking the window or screen in closed position. The strip 10 is arranged in the carrier assembly 11 mounted on the frame A, and the strip is connected by the unit 26 to the storm window B for adjusting and supporting the same in any selected position. The lock comprises a lever 35 mounted in inverted position so that its hook or finger 36 moves downwardly to engage the loop 37 secured to the window. The lever 35 is pivotally mounted on the stud 23, or rather upon a reduced neck 38 on the knob 25 and may be manipulated by the handle 39 to engage or disengage the loop 37 and, of course, lock or unlock the window. A collar 40 fitted over the neck 38 prevents lateral displacement of the lever 35 and the lever may be secured in adjusted position by turning the knob up tight to clamp the lever.

The carrier assembly 11 may be mounted horizontally on the window frame A instead of vertically, as heretofore shown, and this horizontal position is disclosed in Figs. 8 and 9. The operation is identically the same, and the window B is held in adjusted position by the strip 10, but, since the strip cannot bend edgewise, as the window opens and closes, the carrier 11 is pivotally mounted by a pin 41 to a bracket 42 secured to the frame A. The entire carrier assembly may thus rock freely in a horizontal plane as the angle of the strip 10 varies in the opening and closing of the window or screen.

From the foregoing it will be apparent that I have provided extremely simple and effective means for adjusting and locking storm windows and screens with respect to a window frame, and which permits the convenient changing of windows and screens without tools.

It may here be noted that this application is a division of application Serial No. 212,734, filed June 9, 1938, for Window stay, now Patent No. 2,195,426, April 2, 1940.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. A device for adjusting and supporting a movable closure with respect to a fixed frame, the same comprising a strip of spring material formed into a coil at one end and releasably connected at its other end to the closure, a carrier member attached to the frame for carrying the coil and permitting extension and retraction of the end of the strip to thereby support the said closure, and means associated with the carrier member for engaging and locking the strip against movement.

2. A device for adjusting and supporting a movable closure relative to a frame, comprising a carrier member on the frame, a strip of spring metal formed into a coil and arranged in the carrier member with one end extensible toward the closure and connected thereto, and means for expanding the coiled portion of the strip within the carrier member to thereby retain the end portion thereof in an extended, closure supporting position.

3. A device for supporting a movable closure in adjustable position with respect to a frame, comprising a carrier member mounted on the frame, a strip of spring metal formed into a coil and arranged in the carrier member with an end portion extending toward the closure and connected thereto, guide means on the carrier member for guiding the end of the strip outwardly from the coil, and means associated with the carrier member for frictionally engaging the coiled portion of the strip and locking the extended end portion thereof against endwise movement.

4. A device for supporting a movable closure in adjusted position with respect to a frame, comprising a carrier member mounted on the frame, a strip of spring metal formed into a coil and arranged in the carrier member with an end portion extending toward the closure and connected thereto, a brake drum mounted in the carrier member for frictionally engaging the coiled portion of the strip, a cover member, cam means on the brake drum and cover member for urging the brake drum into locking engagement with the coiled strip, and means for adjusting said cover member to cause said cam means to actuate the brake drum.

5. A device for supporting a movable closure

in adjusted position with respect to a frame, comprising a carrier member mounted on the frame, a strip of spring metal formed into a coil and arranged in the carrier member with an end portion extending toward the closure and connected thereto, a brake drum mounted in the carrier member for frictionally engaging the coiled portion of the strip, a cover member, cam means on the brake drum and cover member for urging the brake drum into locking engagement with the coiled strip, and an adjustable knob on the carrier member for adjusting the cover member and urging the brake drum into locking engagement with the coiled strip.

6. A device for supporting a pivotally mounted closure in adjusted position with respect to a frame, comprising a carrier member on the frame, a strip of spring material extensibly arranged in said carrier member and connected at one end to said closure, means for locking the strip in any adjusted extension from the frame to thereby retain the closure at a selected angular position, and the said carrier member being movably mounted on the frame for oscillation by the strip as the angular position thereof with respect to the frame varies during adjustments of the closure.

7. A device for adjusting a movable closure in a frame, the same comprising an elongated metal strip extensible from the frame, a connecting unit secured to the closure and having an opening and radially extending notches, and the said strip having a T-shaped head for releasable engagement, through the said notches, with the opening in the connecting unit.

8. A device for adjusting a movable closure in a frame, the same comprising an elongated metal strip extensible from the frame, a connecting unit secured to the closure and having an opening and radially extending notches, the said strip having a T-shaped head for releasable engagement, through the said notches, with the opening in the connecting unit when the strip is twisted on its axis to align the head with the notches.

9. A device for adjusting and locking a movable member with respect to a fixed member, comprising a carrier member secured to the fixed member, a spring strip formed into a coil in the carrier member and adjustably extended at one end therefrom, the extended end of the strip being connected to the movable member, knob actuated means for locking the strip in any adjusted position, a locking lever oscillatably mounted on the carrier member and frictionally engaged by the knob for locking the lever against movement, a hook on the lever, and a connecting member on the movable member for engagement by said hook.

10. A device for adjusting and locking a movable member with respect to a fixed member, comprising a carrier member secured to the fixed member, a spring strip formed into a coil in the carrier member and adjustably extended at one end therefrom, the extended end of the strip being connected to the movable member, a locking lever adjustably mounted on the carrier member, a connecting means on the said movable member, and a hook extended from the said lever for locking engagement with the said connecting means in one adjusted position of the movable member.

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