Nov. 6, 1923. 1,472,920

J. A. LANE

WINDOW STAY

Filed Dec. 6, 1920

Fig. 1.

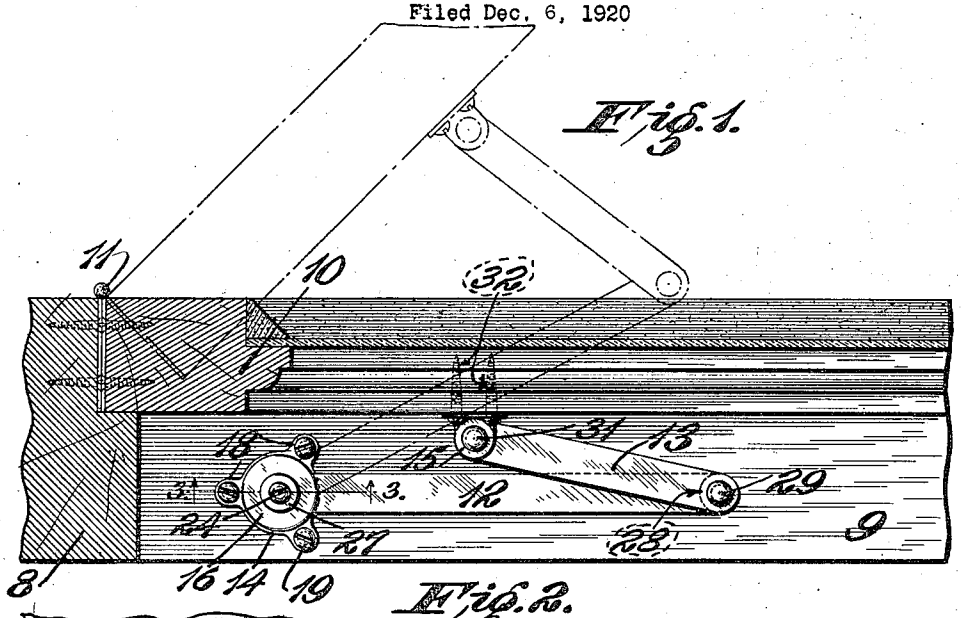


Fig. 2.

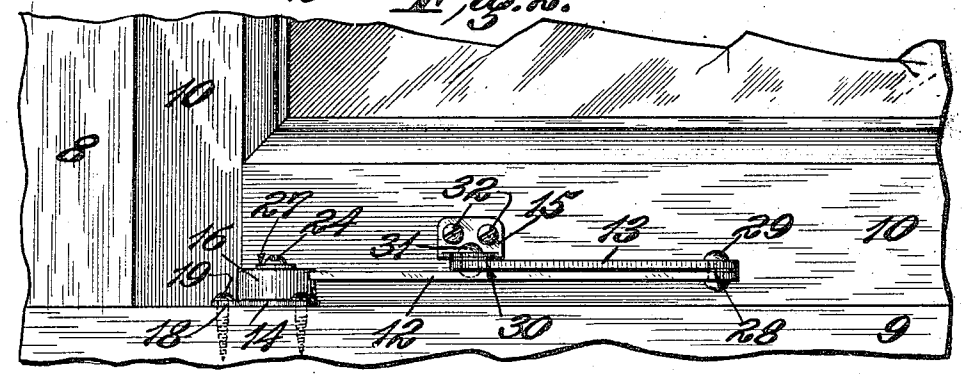


Fig. 3.

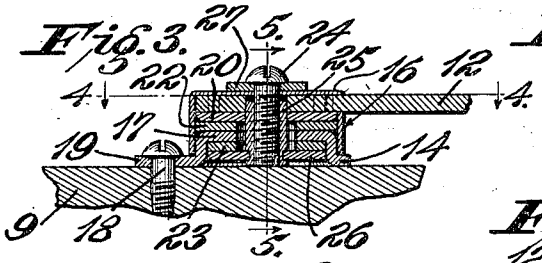


Fig. 5.



Fig. 4.

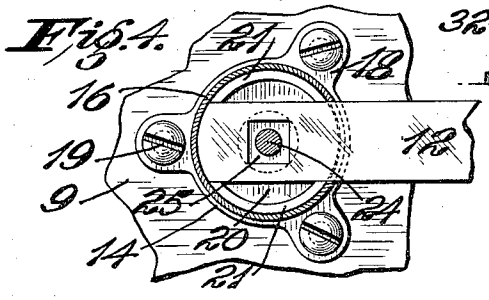


Fig. 6.

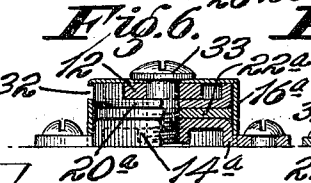
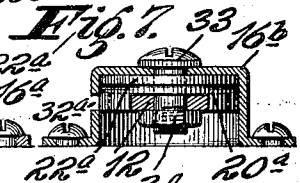


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES A. LANE, OF LOS ANGELES, CALIFORNIA.

WINDOW STAY.

Application filed December 6, 1920. Serial No. 428,473.

To all whom it may concern:

Be it known that I, JAMES A. LANE, a citizen of the United States, and a resident of the city of Los Angeles, county of Los Angeles, and State of California, have invented a new and useful Improvement in Window Stays, of which the following is a specification.

This invention relates principally to props or stays for holding swinging windows in open or partly open position.

The principal object of the present invention is a simple efficient stay of neat appearance which can be readily applied to various designs of windows, doors, blinds or other swinging members for holding said members in open or partly open position. Another object is to cheapen the cost of manufacturing such stays and to provide means whereby the parts of the stay may be adjusted to take up wear and to vary the frictional resistance of said parts and thereby make it greater or less according to the size and weight of the window to which the stay is applied.

The invention consists principally in a window stay comprising links pivotally secured together and adapted for pivotal connection with the window-sill and window-sash respectively, and in the means for creating sufficient stiffness or frictional resistance in one or more of the pivotal joints to hold the sash in adjusted position. The invention further consists in the improved manner of taking up wear between the friction elements. The invention further consists in the means for varying the frictional resistance between said elements whereby the stay can be adjusted for use with windows of different weights and sizes. The invention further consists in the parts and arrangements of parts hereinafter described and claimed.

In the accompanying drawing, which forms part of this specification, and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a horizontal section taken through the hinged side of a casement window with the sash closed, showing a window stay embodying my invention applied thereto, the sash being shown in partly open position by the dot and dash lines;

Fig. 2 is an inside view of the lower portion of the window, showing the stay in side elevation;

Fig. 3 is an enlarged vertical section taken through the anchor member on the line 3—3 in Fig. 1;

Fig. 4 is a horizontal section taken through the anchor member on the line 4—4 in Fig. 3;

Fig. 5 is a vertical section taken through the anchor member on the line 5—5 in Fig. 3;

Fig. 6 is a section similar to Fig. 5 taken through a modified form of anchor member; and

Fig. 7 is a similar section taken through another modified form of anchor member.

In the accompanying drawings, my invention is illustrated as applied to a casement window which comprises a frame 8, a window-sill 9, and a sash 10 pivotally mounted at one side of the frame 8 by means of hinges 11 so as to swing outward.

The stay comprises horizontally disposed long and short links 12 and 13 pivotally secured together. The end of the long link 12 is pivotally attached to the sill 9 inside of of the sash 10 by means of an anchor plate 14, and the end of the short link is pivotally secured to the bottom rail of the sash 10 by means of a bracket 15.

The inner link 12 and the outer link 13 are arranged to swing in a horizontal plane, the link 12 being disposed substantially parallel with the rear face of the sash 10 and the link 13 extending rearwardly at an angle from the outer end of the link 12 toward the anchor plate 14 in the closed position of said sash. The outer link 13 is preferably attached to the sash 10 between the outer end of the inner link 12 and the pivot bracket 15. Thus, the outer end of the outer link 13 swings in an arc described from the sash hinge 11, and the inner end of said link, which is attached to the free end of the link 12, is caused to swing with said link in an arc described from the center of the anchor plate 14.

With this arrangement, any stiffness or frictional resistance created in one or more of the pivotal joints resists swinging movement of the pivotal links 12 and 13 and causes said links to function as a prop or stay for holding the window in the desired adjusted position.

The swinging movement of the link 12 is resisted principally by the frictional contact betwen the parts which constitute the pivot support for its inner end. These parts

are preferably housed within a cylindrical cap 16, which fits over an upstanding circular boss 17 formed in the anchor plate 14 and has a slot in its side wall through which projects the inner end of the link 12. The base portion of the anchor plate 14 is provided with a series of apertured lugs 18 through which project screws 19 for securing the plate to the window-sill 9.

Located within the upper portion of the cap 16 is a circular friction plate 20 having oppositely disposed arcuate flanges 21, which project upward therefrom on opposite sides of the link 12, whereby said friction plate is forced to rotate with the cap 16 when the link 12 is swung. Located within the cap 16, between the upper surface of the upstanding circular boss 17 of the anchor plate 14 and the lower surface of the friction plate 20, is a friction disk or washer 22. Located beneath the upstanding boss 17 of the plate 14 is another friction disk or washer 23.

Extending downwardly through the cap 16 is an adjusting screw 24, which prevents endwise withdrawal of the link from the cap. The screw 24 also serves as a means for clamping the parts of the pivot member together and as a means for varying the pressure of the frictional contact between the friction members. The screw 24 is threaded into a pivot screw or block 25 of rectangular section. This pivot block is disposed centrally within the cap 16 and extends through a central openng in the friction plate 20. This opening is of a size and shape corresponding to the cross sectional shape of the pivot block 25 so as to rotate with the friction plate 20 when the link 12 is swung. The pivot block 25 extends downwardly through alined central circular openings in the friction disks 22 and 23 and in the boss 17 of the anchor plate 14, which openings are of a diameter sufficient to permit the pivot block to turn freely therein.

A circular clamping plate 26 is secured on the reduced lower end of the pivot block 25, whose lower end is upset to retain said plate in position thereon. The plate 26 supports the lower friction disk 23 and holds the upper surface thereof in contact with the under surface of the circular boss 17 of the anchor member 13. The head of the screw bears on a washer 27 which rests on the cap or housing 16.

A friction washer 28 is arranged between the pivotally connected ends of the links 12 and 13, and a rivet 29 is preferably used for pivotally securing said ends together. A friction washer 30 is also arranged between the horizontal flange of the sash bracket 15 and the adjacent outer end of the link 13. The outer end of the link 13 is pivotally secured to the horizontal leg of the sash bracket 15 by means of a rivet 31. The vertical leg of the sash bracket is secured to the inner face of the bottom rail of the sash 10 by means of wood screws 32. The friction washers 22 and 23 and the washers 28 and 30 are made of copper, aluminium or any other soft metal having a tendency to increase of the frictional contact between the movable parts of the stay.

With the arrangement described, the tightening of the adjusting screw 24 causes the soft metal washer 22 to be clamped tightly between the under surface of the friction plate 20 and the upper surface of the upstanding boss 17 of the stationary anchor member 13. This action also causes the washer 23 to be clamped between the under surface of the boss 17 and the upper surface of the clamping plate 26 on the lower end of the pivot block 25, the pressure of the frictional contact between the soft metal friction washers and the parts on opposite sides thereof creating sufficient stiffness in the joint to hold the sash at whatever point it is placed, but insufficient to prevent opening and closing of the sash. The swinging movement of the links 12 and 13 is further resisted by the frictional resistance created by the washer 28 at the pivotal joint between the links 12 and 13 and the washer 30 at the joint between the outer link and the sash bracket. The adjusting screw permits the frictional resistance between the friction elements at the anchored end of the stay to be made greater or less, according to the size and weights of the sash, and also permits said friction elements to be adjusted to take up wear.

In the modified form of construction shown in Fig. 6, the lower edge of the cylindrical cap 16^a is notched to straddle the lugs of the anchor plate 14^a so as to prevent rotation of said cap. The cap is also provided with an arcuate slot 32 adapted to receive the inner end of the link 12, which slot is of a size sufficient to enable the said link to be swung 90 degrees. The friction plate 20^a is provided with a central circular opening through which projects a pivot screw 33. A friction washer 22^a of copper or other soft metal is disposed between the under surface of the plate 20^a and the upper surface of the upstanding boss 17^a of the anchor plate 14^a. The pivot screw 33 passes through alined circular openings in the cap 16^a, link 12, plate 20^a and washer 22^a and is threaded into the anchor plate 14^a. With this arrangement, the action of tightening the screw 33 clamps the washer 22^a between the anchor plate 14^a and the plate 20^a, thus increasing the frictional resistance between the friction elements and retarding the swinging movement of the link 12.

In the modified form of construction shown in Fig. 7, the cap 16^b is secured directly to the window-sill, thus rendering the use of a separate anchor plate unnec-

essary. The cap is slotted horizontally, as at 32ª to receive the inner end of the link 12, said slot being of a length which will permit the link to be swung 90 degrees. The friction plate shown in Fig. 7, except for its inverted position, is identical with the plate 20ª. A friction washer similar to the friction washer 22ª is arranged between the upper surface of the plate 20ª and the under surface of the cap 16ᵇ. A pivot screw, which is similar to the screw 33, extends downwardly through alined circular openings in the friction washer, plate and link, and has a nut 34 on its lower end. The purpose of this nut is to increase the frictional resistance between the friction elements and also to take up wear.

The hereinbefore described arrangement admits of considerable modification without departing from the invention; therefore, I do not wish to be limited to the exact details of construction shown and described.

What I claim is:—

1. A window stay comprising a link and an anchor member for pivotally supporting one end of said link, said anchor member being adapted to be secured to the window sill and having a raised annular portion provided with a central opening, a pivot disposed within said opening, a friction plate secured to said pivot within said annular portion, a friction washer surrounding said pivot between said plate and said annular portion, a friction washer located on the opposite side of said annular portion, a friction plate secured to said link and to said pivot adjacent to said second mentioned friction washer, and a screw engaging said pivot for clamping said friction washers between the opposite sides of the annular portion of said anchor member and said friction plates, whereby the swinging movement of said link is frictionally resisted.

2. A window stay comprising a link and an anchor member for pivotally supporting said link, said anchor member having a raised annular portion provided with a central opening, a rotatable pivot disposed centrally within said opening, a friction plate fixed to said pivot within said annular portion, a friction washer loosely surrounding said pivot within said annular portion, a friction washer loosely surrounding said pivot, outside of said annular portion, a friction plate fixed to said pivot and to said link adjacent to said last mentioned friction washer, and means adjustably engaging said pivot for clamping said friction washer between the opposite sides of said annular portion and said friction plates and for taking up wear of the engaged parts.

3. A window stay comprising a link and an anchor member for pivotally supporting said link, said anchor member having a raised annular portion having a central opening therein, a rotatable pivot disposed axially within said opening, a friction plate fixed to the one end of said pivot within said annular portion, a friction washer loosely surrounding said pivot between said friction plate and the inner surface of said annular portion, a friction washer loosely surrounding said pivot outside of said annular portion, a friction plate fixed to said arm and to said pivot adjacent to said last mentioned friction washer, a rotatable cap covering said annular portion, said second mentioned friction plate and friction washer, said cap having an opening adapted to receive the pivoted end of said link, and a screw extending through said cap and threaded into said pivot, whereby the frictional resistance between the engaged surfaces of the cooperating parts may be varied.

4. A window stay comprising a link, an anchor member for pivotally supporting one end of said link and having a raised annular portion, a cap fitting over said annular portion and fixed against rotation with respect thereto, said cap having a slot therein adapted to receive said link which is movable therein, a friction plate fixed to said arm between the under side thereof and the upper side of said annular portion, a friction washer arranged between said friction plate and said annular portion, a pivot screw extending through alined openings in said cap, said friction plate and said friction washer and being threaded into said annular portion, whereby the tightening of said screw clamps said friction plate between said friction plate and said annular portion and causes the frictional resistance therebetween to resist the swinging movement of said link.

5. A window stay comprising a link and a fixed housing having a slot therein adapted to receive said link, a friction plate fixed to said link within said housing, a friction washer arranged between said plate and said housing, and a pivot screw extending through alined openings in said housing, said friction washer, said friction plate and said link with its head bearing on said housing and its end extending beyond said link and having a nut threaded thereon, whereby the tightening of said nut causes said friction washer to be clamped between said housing and said friction plate and thereby frictionally resists the swinging movement of said link.

6. A stay for swinging sashes and the like comprising a link, an anchor member for pivotally supporting one end of said link, said anchor member being adapted to be secured to the window frame, a link having one end pivotally connected to the outer end of said first mentioned link and adapted at its other end for pivotal connection with said sash, a pivot block rotatably mounted in said anchor member, said pivot block hav-

ing one end fixed to the inner end of said first mentioned link, a friction member fixed to the inner end of said first mentioned link and to said block, a friction member loosely surrounding said pivot block between said anchor member and the friction member on said first mentioned link, and means engaging said block for creating sufficient friction resistance between said friction members and said anchor member whereby the swinging movement of said link is resisted.

Signed at Los Angeles, Cal., this 27th day of November, 1920.

JAMES A. LANE