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WINDOW ALIGNING, ADJUSTING AND LOCKING DEVICES

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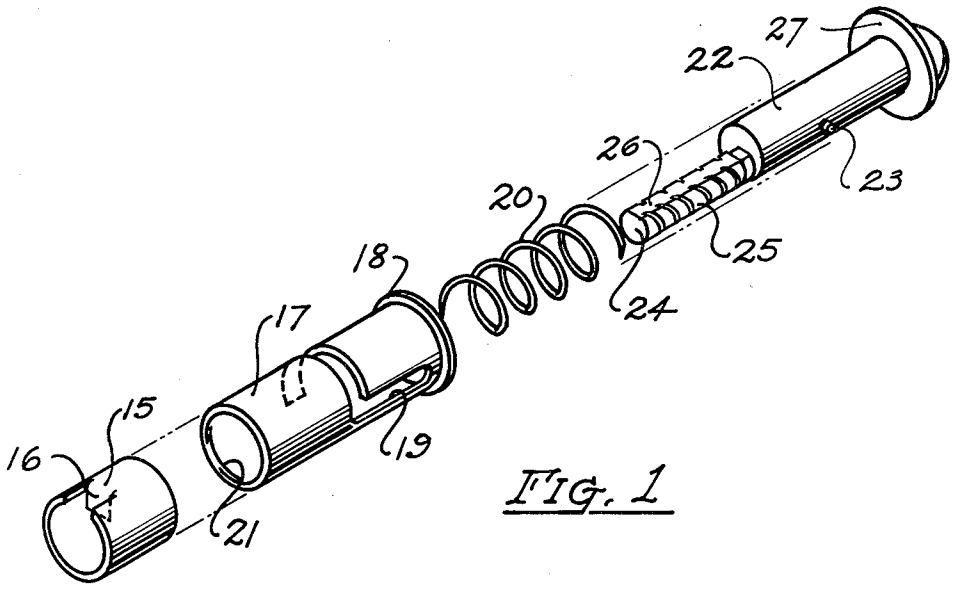


FIG. 1

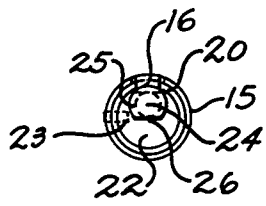


FIG. 2

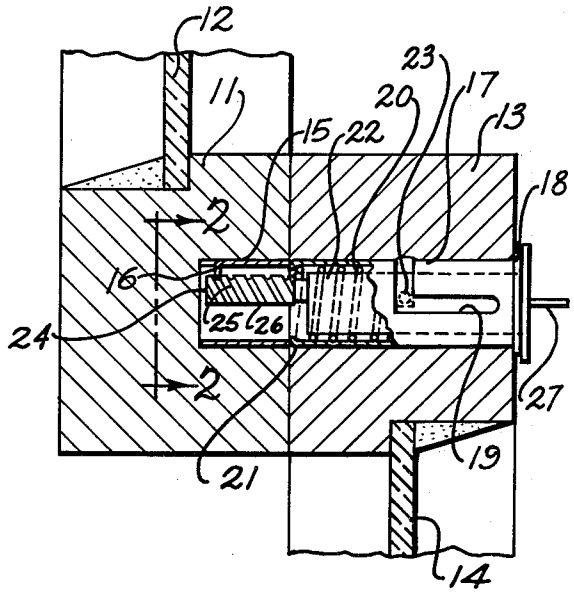


FIG. 3

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WINDOW ALIGNING, ADJUSTING AND LOCKING DEVICES

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This invention relates to hardware, and more particularly, to a new and improved locking, aligning and adjusting device intended primarily for use with window sashes and the like although its applications are not so limited.

Heretofore, various bolt-type locking devices have been proposed, but these have not gone into general use on windows or proved commercially successful for a number of reasons, including complexity, cost, lack of flexibility and adaptability, absence of positive locking means, and most particularly, lack of aligning and adjusting means which are so important in properly closing apertures of the types indicated.

An object of the instant invention is to provide a locking device that is positive in its operation.

Another object is to provide simplicity in such a device.

Another object is to make possible economy of manufacture.

Another object is to provide a window locking device that not only locks the window upon which it is mounted, but also vertically aligns the upper and lower sections of the structure in so doing.

A still further object is to provide such a device which automatically adjusts the sections of a window as to adjacent horizontal relationship.

Another object is to provide wide flexibility of use in such a device.

Another object is to provide longevity in a device of the instant type.

Another object is to provide ease of maintenance therein.

Another object is to provide structural beauty in a window lock.

These and other objects made apparent during the further progress of this specification, are accomplished by means of the present invention, a full and complete understanding of which is facilitated by reference to the drawing, in which:

FIG. 1 is an exploded view in perspective of the invention, showing in detail the various component parts thereof;

FIG. 2 is an end view of the assembled device in initial locking and sash positioning relationship, said view being taken along the line 2—2 of FIG. 3, and

FIG. 3 is an enlarged side view, partially in vertical cross-section, showing the device of the instant invention in operative position on the shashes of adjacent windows, which have been drawn together, vertically adjusted, and locked, all simultaneously by the actions of the elements of subject invention.

Referring now to the drawing in which like numerals refer to corresponding parts or elements throughout the various figures, **11** indicates the upper sash or a window or similar structure having a glass **12** therein, and **13** is a lower sash having a similar glass **14**. A relatively short hollow tubular member **15** is securely mounted in sash **11**, said member **15** being provided with a downwardly extending or projecting element **16** at approximately right angles thereto and of a length about one-fourth that of the diameter of the tube, although both the angle and length of **16** may be changed or varied to suit the exigencies of a given situation. The function of **16** will be explained during the further progress of this specification.

A second tubular element **17** is now provided to fit snugly and even tightly into sash **13**, said tube being provided with a circular stop member **18** at one end thereof. An operating guide-slot **19** is formed in the side of **17**, said slot being generally L-shaped in contour; and a coil spring **20** is mounted in the interior of **17** to bear at one end and be anchored in a slot **21** formed in the end of the tube **17**, which slot may also be described as a flange, to better distinguish it from **19**.

An elongated horizontally reciprocable bolt or plunger **22** operates in the interior of tube **17** against the pressure of spring **20**, said bolt being provided with a pin **23** securely anchored in the side thereof and riding in slot **19**, said pin also engaging the end of spring opposite to that held in position by flange **21**.

Special attention is now directed to the end **24** of bolt **22**, which may be formed integral therewith, and which consists essentially of an *off-set* threaded section **25** of smaller diameter than the spring-engaging section of **24**, and having one side machined flat as at **26**.

The opposite end of the bolt or plunger may be provided with an ornamental operating handle or knob **27** which enhances the beauty of the assembled and installed device, and at the same time facilitates the operation thereof, which is as follows:

It will be noted that when subject device is in unlocked position, bolt **22** and more particularly, end **24** thereof, is entirely contained in tubular sleeve **17** against the tension of spring **20** on pin **23** which is held against the right end of slot **19** (FIG. 2); and hence sashes **11** and **13** may be moved freely as desired, but when these elements are to be locked and the window closed, they are then brought into approximate adjacent positions and the bolt manipulated inwardly through the agency of handle **27**. The flat side **26** of the end of the bolt lies on top thereof at this time so as to clear downwardly projecting engaging element **16** or slide in close engagement therewith.

When pin **23** of bolt **22** has reached the left horizontal end of slot **19** (FIG. 2), handle **27** is then turned clockwise which causes teeth or threads **25** to firmly engage the end of **16**, which causes several things to happen more or less simultaneously, to wit:

(1) The device is locked, bolt **22** being firmly held against displacement by the engagement of pin **23** with the vertical segment of slot **19** at one end and thread **25** with **16** at the other.

(2) The sashes are brought closer together until a point of maximum proximity is reached, the semi-screw action of elements **25–16** effecting this result for as long as knob **27** is turned to the right.

(3) What is more important, the sashes are brought into nearly perfect horizontal adjustment by this same action as is suggested by FIG. 2, the turning of the handle resulting in off-set member **24** operating in conjunction with threads **25** and element **16**, forcing tubular element **15** and hence sashes **11** and **13**, upwardly or downwardly as may be necessary to obtain this result, the tolerance characteristics of a given window assembly largely dictating where the "give" will occur to bring about this desired result. Upon reversal of handle **27** to the point where pin **23** engages the longitudinal extension of slot **19**, spring **20** forces plunger **22** to the right, withdrawing **24** from **15** and permitting the window to be opened in the usual manner.

The invention may be used both on conventional windows, and aluminum windows, where the action may be horizontal rather than vertical; may be used as an intermediate lock by placing to the side of an upper or lower pane, and other uses and applications will likewise suggest themselves.

While one form of the instant invention has been disclosed and described in considerable detail herein, it will be apparent that no limitation is intended or implied thereby, but on the contrary that various modifications, reconstructions, additions, deletions and the like may be resorted to without departing from the appended claims, which are to be given a construction and scope fairly in keeping with the contribution to the art.

I claim:

1. In a device of the character described, a tubular member having a thread engaging element extending from the inner wall thereof and being securely anchored thereto, a second tubular member having a small flange at one end thereof and a stop member at the opposite end, an L-shaped slot formed in the side of said second tubular member, a coil spring inserted in said tubular element so that one end engages said flange, a bolt member inserted in said second tubular member, a handle on one end of said bolt, a pin secured to one side of said bolt at approximate right angles thereto, said pin operating in said slot; and an off-set smaller end segment formed integral with said bolt, said segment having a longitudinally extending flat surface and threads for engaging the inwardly extending element of said first tubular member, whereby when the bolt is forced inwardly and its handle is rotated, said thread members will generate a locking-aligning-tightening action as between said first and second tubular members and any structure to which they may be secured at the time.

2. In a device of the character described, in combination, a thread receiving and engaging member, a tubular member, an angular slot formed in the side of said tubular member, a spring inserted in said member, a plunger inserted in said tubular member against the tension of said spring, means for rotating said plunger, a pin secured to said plunger in operative engagement with said angular slot, and a smaller off-set end segment formed integral with said plunger, said segment having a longitudinally extending flat surface and threads adjacent thereto, whereby when the plunger is forced inwardly and then

rotated in said thread engaging member, a locking-tightening-aligning action is generated as between the receiving member and the tubular member, and hence objects to which they may be securely attached as for example the upper and lower panes of a window.

3. In a device of the character described, in combination, a tubular receiving and engaging member firmly mounted in the upper sash of a window, a second tubular member likewise rigidly mounted in the sash adjacent thereto, an operating slot formed in said second tubular member, a plunger disposed within said second tubular member and kept normally out of engagement with the first tubular element by spring means, a pin anchored to said plunger and riding in said operating slot, and a smaller off-set end segment integral with said plunger and having threads calculated to receive said engaging member in such a manner that when the plunger is forced inwardly into engagement therewith, and said plunger is rotated, a locking action occurs as between the two sashes in which the tubular members are mounted.

4. The device of claim 3 in which the actuation of the plunger also results in an aligning of the sashes.

5. The device of claim 3 in which the rotation of the plunger also results in a tightening action as between the structures with which the tubular members are associated.

6. The device of claim 2 in which the thread receiving member is in the nature of a nut.

7. The device of claim 1 in which the slot in the second tubular member is of any suitable contour to effectively govern the action of the bolt member.

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