Jan. 17, 1956 J. E. HAYNES 2,731,287

WINDOW SASH TENSIONING DEVICE

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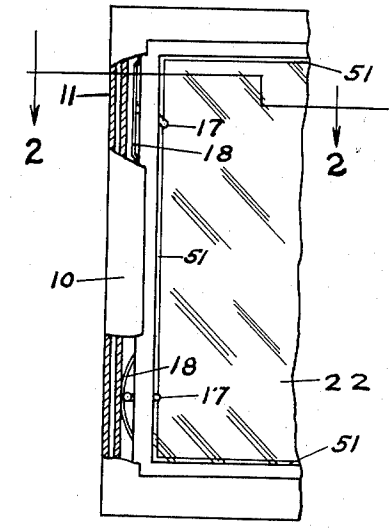


FIG. 1

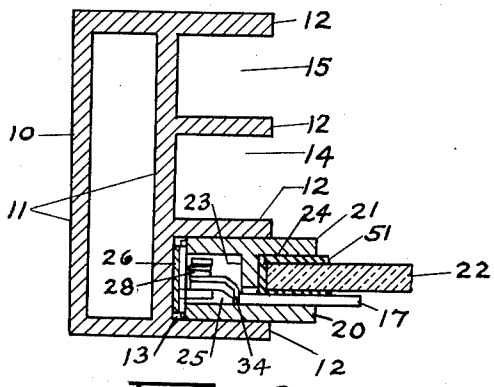


FIG. 2.

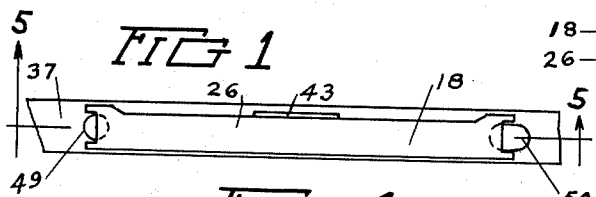


FIG 4

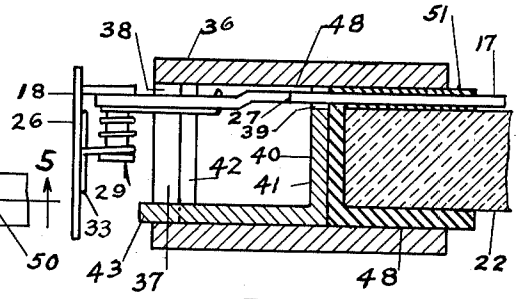


FIG. 3.

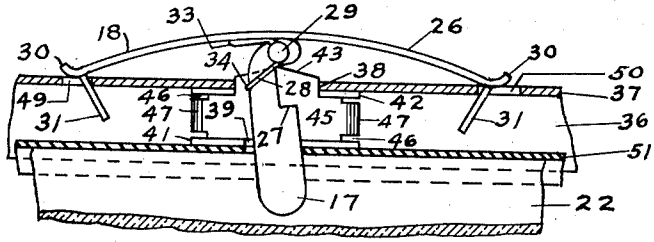


FIG. 5.

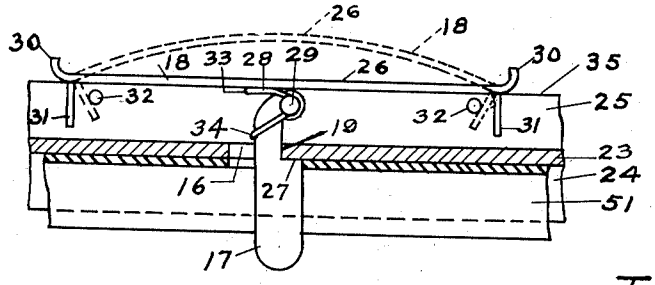


FIG. 6.

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WINDOW SASH TENSIONING DEVICE

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4 Claims. (Cl. 292—76)

This invention relates to building construction and more particularly to window structures of the vertical reciprocating type where the sashes are replaceable, at the option of the user.

It has among its objects the provision of a removable window sash of a new and improved construction that will include a number of particular advantages not heretofore anticipated in the prior art.

Another object of the invention is to provide a new and improved auxiliary window sash that will be removable and replaceable easily and effectively in a window frame without the need of special tools.

Another object of the invention is to provide a new and improved retractable tensioning means for adjustably taking the side play out of a window sash after it has been inserted in a window frame and for frictionally holding the sash in predetermined positions in said window frame.

Another object of the invention is to provide a removable sash tightening device for attachment to a window sash.

Other objects of the invention will become apparent as the invention is more fully set forth.

For a better understanding of the invention, and its principles and operation, reference is made to the accompanying drawings, which disclose a particular form of the invention by way of example and not of limitation. These drawings are explained in the following description while the claims indicate the scope of the invention.

Referring to the drawings:

Figure 1 is an inside elevation of a window frame having an auxiliary sash unit with removable sash tightening devices embodying this invention, with parts of the frame broken away to show the sash with its upper device depressed and the lower device expanded;

Figure 2 is a sectional view taken along line 2—2 of Figure 1;

Figure 3 is a sectional view of a modification taken through a sash channel showing the tightening device in expanded condition;

Figure 4 is an end view of a sash channel showing the bearing spring mounted thereon;

Figure 5 is a sectional view taken along line 5—5 of Figure 4; and

Figure 6 is a sectional view similar to that shown in Fig. 5, except that the bearing spring is shown depressed in full lines and expanded in broken lines and mounted in an H formed sash construction, instead of the channel construction shown in Figure 5.

Similar reference numerals refer to similar parts throughout the drawings.

In the construction shown in the drawings, a storm window frame **10** of conventional channel form is commonly employed to hold removable sashes. It consists of a back **11** with four flanges **12** extending out at right angles from the back. These flanges provide three U-formed recesses **13**, **14** and **15** longitudinally along the

vertical sides of the frame. In the two outer recesses **14** and **15** a pair of conventional sashes may be slidably positioned and a screen or sash may be removably positioned in recesses **13**. The term storm window is interpreted broadly in this description, as it is intended to include window sashes of glass, screening or otherwise within their frameworks, and not simply for storm purposes in the usual limited sense.

The frame **10** is shown as having mounted therein a full length sash, i. e. a sash large enough to close the opening in the frame. The sash framework **20** has a glass panel **22** mounted in it. The construction of the sash is preferably of H construction having a central web **23**.

This web **23** separates the channels **24** and **25** on both sides thereof. The channel **24** is to receive the pane of glass **22**, and the channel **25** is used for the sash tensioning mechanisms **26**. The web **23** is slotted at **16** to allow the locking arm **17** attached to the bearing spring **18** to pass through, so that its undercut **27** will engage the edge **19** of the web **23** when the spring **18** is depressed. A spring **28** has its central portion coiled around a pin **29** connected to the central portion of the concave side of spring **18**, with one end reacting against a plate **33** secured to said portion and its other end connected to said locking arm, which is pivotally mounted on said pin, as shown in the drawings. The ends of the bearing spring **18** are preferably provided with upturned edges **30** to form bearings so that the ends of the hardened springs will not cut into the edges **35** of the sash framework **20** as they move thereon. Legs **31** are formed at the ends of the spring **18** to resiliently fit over pins **32** in sash framework **20**.

The vertical sides **21** of the framework **20** are used for removably supporting the sash tensioning mechanisms **26** in the channel **25** and supporting the glass in channel **24**. The tensioning mechanisms **26** are removably attached to one side of the vertical sides **21** and spaced at suitable locations to enable them to hold the sash in the window frame **10**. When the tensioning mechanisms **26** are depressed against the adjacent vertical side **21**, said side may be slipped into one of the recesses in the window frame **10**. After the sash is inserted in the window frame **10**, the tensioning mechanisms **26** are released so the bearing springs **18** can expand to tension the sash in the channels of the window frame **10** and prevent side play and to prevent unauthorized removal of the sash.

In the modified form shown in Figure 3 the sash frame is formed of a channel **36** with its web **37** slotted at **38** to allow the locking arm **17** to be inserted through the slot **38** so that it will contact and lock in the slot **39** of the inner flange **41** of a latching device **40** when the bearing spring **18** is depressed. The outer flange **42** of the latching device is cut and the web **45** of the latching device has a portion projecting beyond the flange **42** to form a key **43** to enter the slot **38** in the web **37** of the channel **36** to prevent the latching device from lateral movement when the bearing spring **18** is depressed. The web **45** is provided at each end with cut-outs **46** so the edges may be bent outward at **47** to form spring tensioning means to frictionally fasten the latching device **40** between the walls **48** of the channel frame to prevent its falling out of the channel when it is in use. The web **37** is preferably provided with a round hole **49** and an elongated hole **50** for each bearing spring used with the sash.

To remove a sash equipped with this tensioning device from a window frame **10**, the sash is pushed against one of the side corners of the window frame **10** to preferably compress one bearing spring at a time, then depress the next spring, etc. The amount of pressure re-

quired to compress the spring individually will be less than the total pressure required to compress all the springs at the same time. In the H construction used in the sash, the bearing spring **18** is depressed and moves the locking arm **17** through the slot **16** in the web **23** until the under-cut **27** engages the edge **19** of the web **23** through the action of spring **33**. In the channel constructed frame **36** the bearing spring **18**, locking arm **17**, undercut **27**, and spring are the same construction and operation as used in the H construction frame. The under-cut **27** engages in the slot **39** in the latch plate **40** and holds the spring **18** depressed until released by locking arm **17**.

While but two forms of sash have been shown attached to the invention disclosed herein, it is not intended to limit the construction of the device to these particular forms, as it is appreciated that other structures could be made that employ the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. A device for holding a sash in a window frame: said device comprising an arcuate spring; a pin connected to the central portion of the concave side of said spring; a plate secured to said central portion adjacent to said pin; a locking arm pivoted to said pin and having a recess intermediate the ends thereof; a spring having an intermediate portion coiled around said pin, with one end engaging said plate and the other end secured to said locking arm to urge it to a position in which an edge of said recess engages an abutment, when said arcuate spring is depressed, to hold said spring in such condition.

2. A device of the type set forth in claim 1 adapted to be mounted in a channel in a side of a sash and including means for retaining said device in said channel after the device is positioned therein.

3. A device of the type set forth in claim 2, in which said retaining means includes pins projecting from the opposite ends of the concave side of said arcuate spring for engagement with elements extending across the channel in such sash.

4. A device of the type set forth in claim 2 including a latching device comprising a hollow member having a web and a pair of flanges projecting in parallelism from the opposite edges of said web, both of said flanges having alined openings therein for the passage therethrough of said locking arm.

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