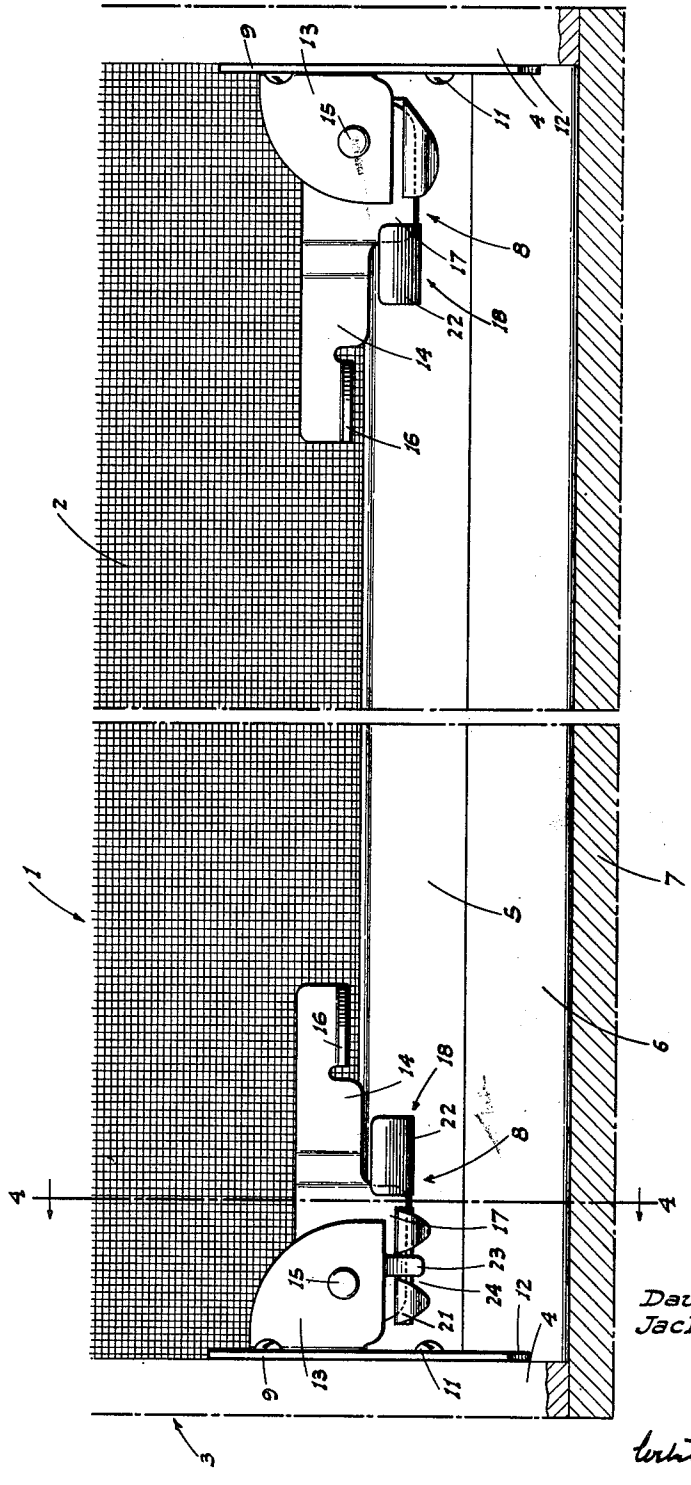
May 18, 1954 D. J. RUST ET AL 2,678,691

SCREEN TENSIONING DEVICE

Filed July 3, 1950 2 Sheets-Sheet 1

Fig. 1



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Fig. 2

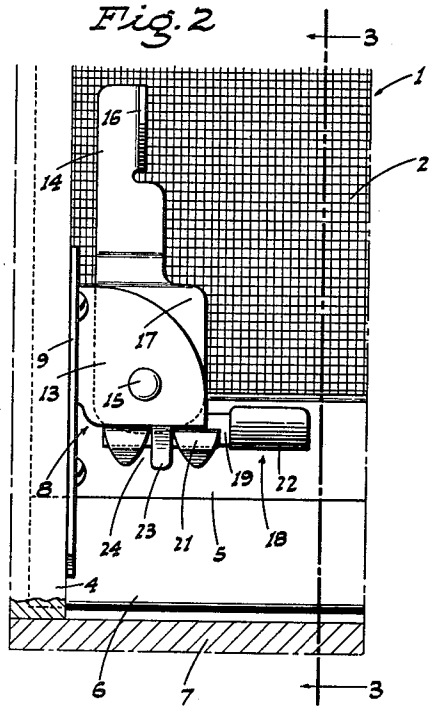


Fig. 3

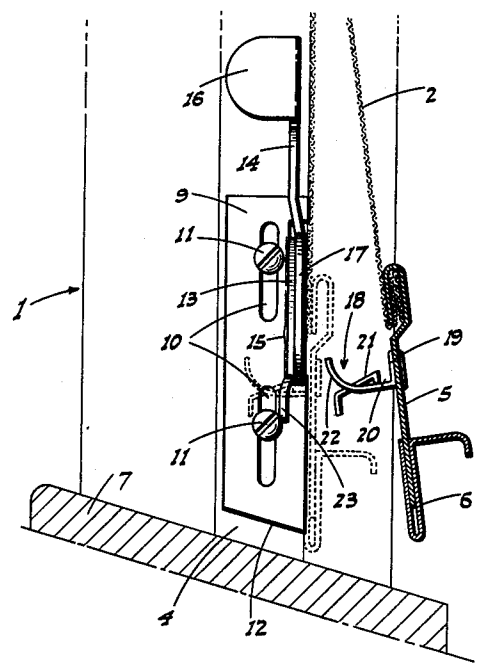


Fig. 4

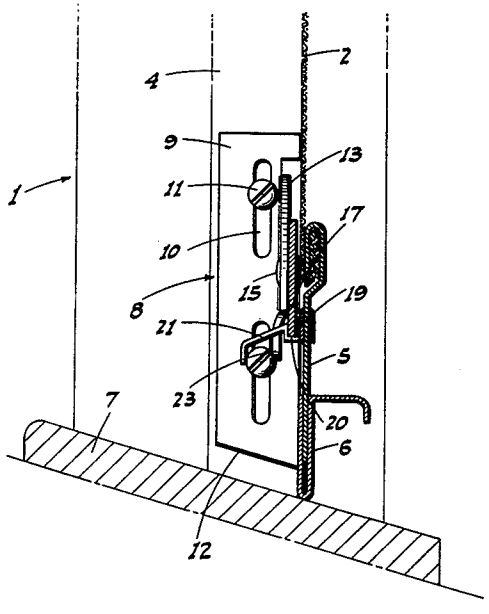
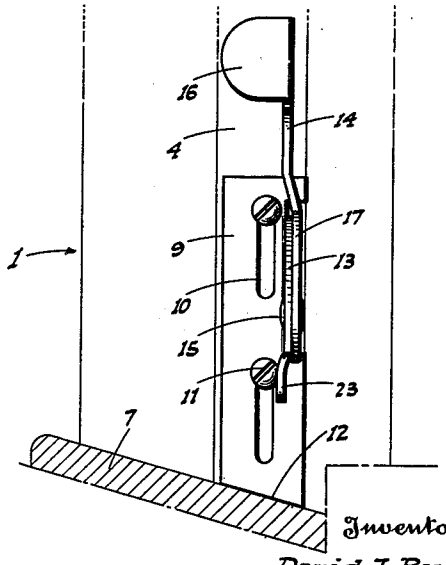


Fig. 5



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SCREEN TENSIONING DEVICE

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2 Claims. (Cl. 160—328)

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The present invention relates in general to frameless window screens of tension type; i. e. maintained under tension by tensioning devices connected between the window frame and a bottom cross bar on the screen.

The present invention provides, as a major object, a screen tensioning device of improved design; the device being easy to install, convenient and quick-acting to manually tension or release the screen, and when in engaged position effectively holding the screen under tension and locked against opening from the outside.

The invention also contemplates the provision as an important object, of a frameless window screen tensioning device which requires no attachment to the window sill of any working part; the window frame mounted parts being affixed solely to the jambs or blind stops of said frame in readily accessible but relatively out-of-the-way positions.

Another object of the invention is to provide a frameless window screen tensioning device which can be easily adjusted whereby to initially provide proper tension, or to subsequently increase the tension as necessary.

A further object of the invention is to provide a frameless window screen tensioning device which includes, in novel combination, a window frame mounted cam lever working laterally from the jamb, and a cam engaging unit fixed on the adjacent portion of the bottom cross bar of the screen; said unit being forcefully depressed by the cam lever, to tension the screen, when the lever is in a predetermined beyond-dead-center position, and the unit then locking with the cam of said lever to prevent outward displacement of the bottom cross bar and screen.

An additional object of the invention is to provide the device with a locator whereby to properly position the bottom cross bar before application of the screen tensioning force thereon, and to prevent any lateral displacement of said bar which might otherwise occur under the influence of the cam action.

It is also an object of the invention to provide a screen tensioning device which is designed for ease and economy of manufacture.

A still further object of the invention is to provide a practical and reliable frameless window screen tensioning device, and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of

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such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a fragmentary inside elevation of a frameless window screen and window frame, with a pair of tensioning devices as in closed or engaged position of use between said screen and frame.

Fig. 2 is a similar view, but solely of one device, with the latter in open or released position.

Fig. 3 is a cross section on line 3—3 of Fig. 2.

Fig. 4 is a cross section on line 4—4 of Fig. 1.

Fig. 5 is a front elevation of one of the devices in initial position of installation; the screen being omitted.

Referring now more particularly to the characters of reference on the drawings, the frameless window screen is indicated generally at 1, and includes a section or screen of wire cloth 2; such screen being suspended from the top (not shown) of the window frame, indicated generally at 3, by means of a top cross bar and suitable attachment brackets.

The screen, at its opposite edge portions, abuts the jambs or blind stops 4 of the window frame, and at its lower end said screen includes a bottom cross bar 5 which spans between said blind stops.

The bottom cross bar 5 includes a floating or vertically adjustable U-shaped bottom strip 6 which bears, at its lower edge, on the sill 7. After the screen 1 is tensioned by forceful downward pressure applied to the bottom cross bar 5 by the tensioning devices hereinafter described, the bottom strip 6 is adjusted to provide a full closure for the slight gap which may remain above the sill 7.

In the present embodiment there is disclosed a pair of the tensioning devices, each such device being indicated generally at 8. Except in the respects as will be hereinafter particularly described, the tensioning devices 8 are of identical construction, and therefore a description of one will suffice for both.

Each tensioning device 8 comprises a flat, vertically elongated attachment plate 9 formed with a pair of slots 10 vertically elongated and spaced in the direction of their elongation.

The attachment plate 9 is adapted to be secured flush against the laterally inner face of the window frame jamb or blind stop 4 at the lower end portion of the same, being adjustably affixed thereto by headed screws 11 which extend through the slots 10.

Initial installation of the attachment plate 9 is easily and readily accomplished as follows:

The attachment plate 9 has its lower end diagonally cut, as at 12, with the angle of cut substantially the same as the angle of inclination of the top surface of the still 7. To secure the attachment plate 9 it is first disposed flat against the jamb or blind stop 4 with the diagonally cut lower end 12 resting on the sill 7 (see Fig. 5), at which time the attachment plate 9 is vertical. Then the screws 11 are run in at a point immediately adjacent the upper ends of the slots 10, as shown in said figure. Before the screws 11 are finally tightened, the attachment plate 9 is slid upwardly to the desired extent. This disposes the attachment plate 9 so that it may subsequently be adjusted up or down for proper screen tensioning by means of the mechanism hereinafter described. See, for example, Fig. 3.

A bracket 13 is formed integral with the attachment plate 9, and projects laterally inwardly therefrom in spaced relation rearwardly of the plane of the section of wire cloth 2.

A cam lever 14 is pivoted adjacent but short of its lower end to the bracket 13, as at 15, for swinging between an upstanding released position, as in Fig. 2, to a substantially horizontal, laterally inwardly projecting engaged or beyond-dead-center position, as in Fig. 1. The cam lever 14 includes a finger tab 16 on its outer end to facilitate manipulation of said lever, while the lower end of the lever includes an enlarged, laterally projecting cam 17. The cam 17 has substantially greater lateral projection from the pivot 15 than the distance between said pivot and the lower end of the cam lever.

The cam lever 14, together with its laterally projecting cam 17, cooperates with a cam engaging unit, indicated generally at 18, which is affixed to the inner face of the adjacent end portion of the bottom cross bar 5; such unit comprising the following:

A rigid mounting bar or strip 19 is affixed to the inner face of the bottom cross bar 5 adjacent, but short of, the end thereof, such strip extending horizontally lengthwise of said bottom cross bar.

The mounting strip 19 is formed with an integral, upwardly facing catch channel 20 occupying a position directly below the bracket 13; there being a downwardly and outwardly inclined deflector tongue 21 which merges with the inner upper edge of said channel 20.

The attachment plate 9 is adjusted to a position such that when the cam lever 14 is in its upstanding released position, as in Fig. 2, the lower end of said lever—upon pulling of the bottom cross bar 5 inwardly against the blind stops 4—will engage the deflector tongue 21, depressing the latter so that it may pass beneath the cam lever and permit said lower end of the latter to readily drop into the catch channel 20. See Fig. 4.

For pulling of the bottom cross bar 5 inwardly to a position against the blind stop 4, and for the purpose of causing the lower end of cam lever 14 to engage in the catch channel 20, as above, the mounting strip 19 is provided laterally inwardly from the deflector tongue 21 with a finger pull 22 which is curved upwardly to facilitate manual engagement thereof.

After the lower end of the upstanding cam lever 14 is snap-engaged in the catch channel 20, said cam lever is swung laterally inwardly and downwardly to a substantially horizontal position, as in Fig. 1, and at which time the cam 17 turns into the catch channel forcefully depressing the same, together with the bottom cross bar 5, whereby to positively impart tension to the section of wire cloth 2.

With the cam lever 14 in its lowered or engaged position, the cam 17 is so forcefully engaged in the catch channel 20 that the bottom cross bar 5 is locked against unauthorized outward displacement and prevents opening the screen from exteriorly of the window.

In order to prevent the cam lever 14 from swinging downwardly an undesired distance after passing over dead-center, the cam 17 is of such length that it abuts or rests in the finger pull 22 in the manner shown in Fig. 1.

It is understood, of course, that two of the tensioning devices 8 are employed at opposite sides of the window frame, to the end that the screen may be properly tensioned by the application of the downward force to opposite end portions of the cross bar 5.

In order to prevent any lengthwise displacement of the bottom cross bar 5, when the devices 8 are being actuated to screen tensioning position, one of said devices (the left hand one in Fig. 1) is provided with a locator finger 23 which is formed integral with, and depends rigid from, the bracket 13; the adjacent deflector tongue 21 being formed with a rearwardly opening, flaring notch 24 which receives said locator finger 23 when the device is in use.

The locator finger 23, as engaged in the flaring notch 24, prevents any motion of the cam engaging unit 18, and consequently the bottom cross bar 5, lengthwise of the latter and provides automatic locating thereof.

The described frameless window screen tensioning device is simple, sturdy, practical, and reliable; being easy to install and convenient to use. The device makes possible quick opening or closing of the frameless window screen 1, normally maintaining such screen under positive and adequate tension, and also locking said screen against unauthorized opening from the outside.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. A tensioning device for a frameless window screen having a bottom cross bar adapted to abut at the ends against sides of a window frame; comprising a bracket adapted to be secured to one of said sides adjacent the bottom cross bar of the screen, a cam lever pivoted adjacent but short of its lower end on the bracket and swingable laterally between an upstanding position and a generally horizontal but over-dead-center position adjacent and lengthwise of the bottom cross bar, a cam on the lower end of the lever having maximum downward projection when the lever is in said last position, an upwardly facing channel on the bottom cross bar adapted to receive the lever and cam therein, the latter exerting a forceful downward thrust on the channel when the lever is in said over-dead-center position, and a

cam deflector tongue inclining rearwardly and downwardly from the outer edge of the channel; said tongue having a rearwardly opening notch therein, and a locator finger depending from the bracket for locating engagement in the notch.

2. A tensioning device for a frameless window screen having a bottom cross bar adapted to abut at the ends against the sides of a window frame; comprising a bracket, means to secure the bracket to one of said sides adjacent the bottom cross bar of the screen, a cam lever pivoted adjacent but short of its lower end on the bracket and swingable in a plane lengthwise of the cross bar between an upstanding position and a position generally lengthwise of the bottom cross bar, the lower end of the lever having a cam thereon having maximum downward projection when the lever is in said last position, an upwardly facing channel on the bottom cross bar adapted to receive the lever and cam therein, the latter exerting a forceful downward thrust on the channel as the lever approaches said channel, and a cam deflector tongue inclining rearwardly and downwardly from the outer edge of the channel, in position to engage the cam upon rearward movement of the cross bar before the channel is directly under the cam.

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