April 22, 1952 A. COHEN 2,593,539

SCREEN ATTACHING AND TENSIONING MEANS

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Fig. 1.

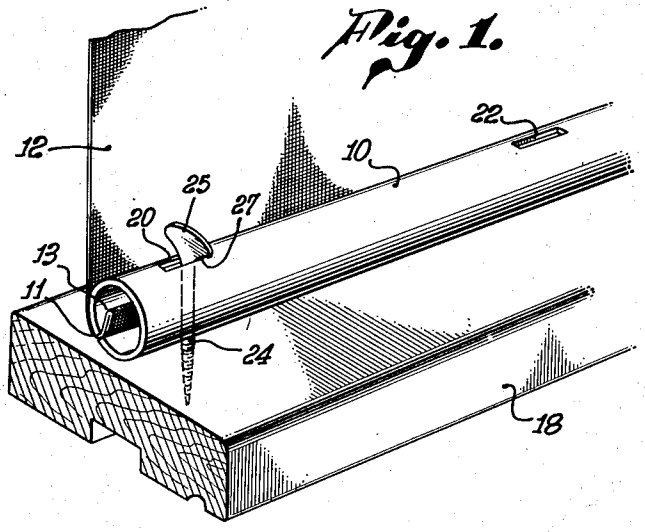


Fig. 2.

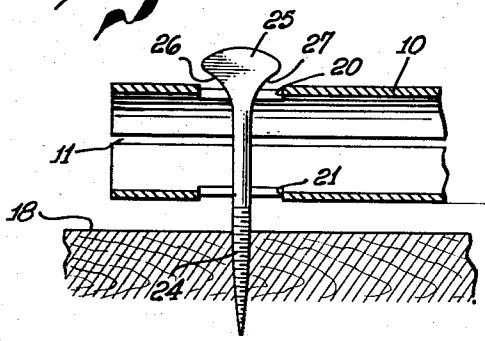


Fig. 3.

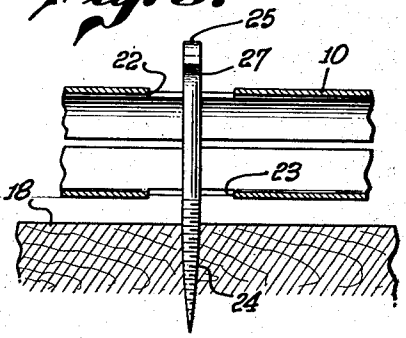


Fig. 4

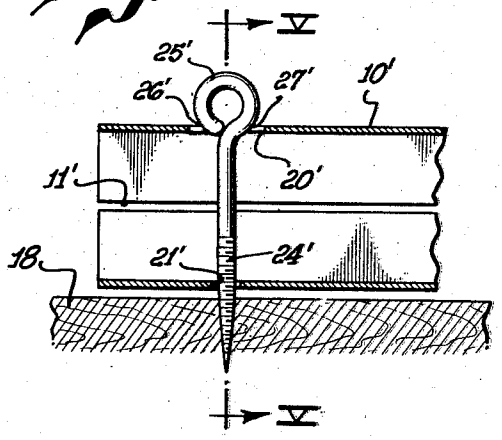
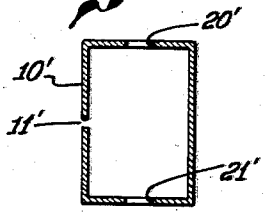


Fig. 5



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SCREEN ATTACHING AND TENSIONING MEANS

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5 Claims. (Cl. 160—328)

1

This invention relates to improvements in means for attaching screens or screening materials such as ordinary fly screening over window openings and the like. The invention is particularly directed to improvements in what are commonly known as frameless window screens. Such frameless means of attachment permit a length of screening material to be attached to opposite sides of a window frame, as for example, to the head and sill of a window, and to be drawn sufficiently taut to completely seal such window openings against the entry of insects, etc.

Prior types of so-called frameless window screen attaching means required the use of rather intricately formed metal strips and specially made and designed fastening devices for connecting the ends of the screen to the head jamb and to the sloping sill of a window. In these prior devices, entirely different construction and attachment means were used at the head end and at the sill end of the screen, primarily because the sill provides a sloping surface whereas the head jamb is generally plane and level.

The present invention obviates the necessity of using different means of attachment at the opposite ends of the screen, and therefore the attachment means of the present invention may be used at both ends of a screen. The attachment means may be used on sills, jambs or the sides of a window frame. Furthermore, the attachment means of the present invention do not require complex structural forms but, instead, consists of inexpensive readily formed elements free from protruding parts. The construction is inexpensive and neat. It permits installation and tightening of the screen without the use of tools.

Generally stated, the attaching means of the present invention comprises a hollow, preferably tubular metallic member provided with a longitudinally extending slit. The end of the screen to be positioned is inserted through the slit, the thickened end portion of the screen being received within the tubular body while the sheet itself extends through the slit. The tubular element is provided with a plurality of virtually diametrically opposed ports. These ports may be in the form of slots through which a fastening element provided with a flat, relatively narrow head may extend. The shank of these fastening elements is threaded and may be readily screwed into the wooden frame of the window. The relatively thin and flat heads are provided with upwardly diverging margins arranged to selectively cooperate with the edges of the slot in the tubular element when such head is placed in a portion

2

transverse to the slot. This tends to collapse the tubular element causing it to grasp the screen and place the screen under tension. As previously indicated, fastening devices of the character stated may be used at both ends of the screen and be identical in form, construction and operation.

It is an object of the present invention therefore to disclose and provide a simple and inexpensive screen attaching and tensioning means.

A further object of the invention is to disclose and provide an improved screen attaching and tensioning means which is applicable for use in all positions and in engagement with either the head jamb or the sill or the sub sill of a window or other building opening.

A still further object of the invention is to disclose and provide a screen attaching and tensioning means composed of a minimum number of readily available and easily manufactured elements.

These and various other objects and advantages of the present invention will become apparent from description given hereinafter. In order to facilitate understanding, reference will be had to the appended drawings in which:

Fig. 1 is a perspective view of an end portion of a fastening means embodying the present invention, illustrating the use of such means between a screen and the sill of a window.

Figs. 2 and 3 are longitudinal sections taken through fastening means of the character illustrated in Fig. 1, showing such means in two positions.

Fig. 4 is a longitudinal section through a slightly modified form of the invention.

Fig. 5 is a transverse section of the attaching tube taken along the plane V—V in Fig. 4.

Since the attaching means of the present invention are identically the same width they are used at the upper or lower end of a sheet of screening, the mode of operation will be readily understood from an examination of Fig. 1. The attaching means of the present invention comprises a hollow tube 10 provided with a continuous open ended lateral slit 11 extending longitudinally the full length of the tube 10. It is to be understood that the length of the tube 10 will vary with the width of the window or other opening which is to be provided with the screen. Ordinarily such tubes 10 are sufficiently long to extend from side jamb to side jamb and cover the blind stop on either side. Window screening may be obtained in various widths so that the finished edges run vertically, the un-

finished edges being rolled over or otherwise thickened and are protected against unraveling. A rolled over and brazed or spot welded end of the fly screening 12 is indicated at 13 and it will be noted that such thickened end portion of the sheet of screening is received within the hollow tube 10.

The element 10 is provided with a plurality of spaced longitudinally extending slots such as the slots 20 and 22. A port is formed in the tube 10 diametrically opposite and in alignment with each of the slots 20 and 22. Such ports are indicated at 21 and 23 in Figs. 2 and 3.

In order to attach the window screen 12 to the sill 18, the tubular member 10 may be laid upon the sill in the desired position and fastening means inserted through the slots 20, 22, etc. and screwed into the sill. The fastening means preferably comprises a threaded shank 24 capable of extending through the aligned slot 20 and port 21. Each of such fastening means is provided with an enlarged head 25, such head being normally capable of passing through the slot 20 when the head 25 is in alignment with the slot. The heads 25 are relatively thin and narrow and are provided with upwardly diverging margins such as 26 and 27 extending from the shank 24. Figure 2 illustrates the initial position of the parts and it will be noted that member 10 is spaced from the sill or window framing. After the fastening means has been screwed into the frame of the window a desired distance, the head 25 is given a final quarter turn so as to place the head in a plane transverse to the slot 20. Such last turn results in a cooperative action between the diverging margins 26 and 27 of the head and the edges of the slot 20 whereby lateral pressure is exerted upon the tube 10 and its diameter is slightly reduced. This final position is indicated in Figure 3 and it will be noted that the action just described has slightly depressed tube 10 into closer relationship with the sill. This not only anchors the tube firmly to the sill but also clamps the hold of the tube upon the screen and simultaneously tensions the screen.

It will be noted that the inclination or angularity of the surface to which the device is attached is immaterial. The same fastening means are used at the top of the screen that are used at the bottom. The resulting device is neat, simple to install and readily adjusted.

It will be noted that in the forms illustrated in Figs. 2 and 3 the lower ports 21 and 23 are in the form of slots through which the head 25 may readily extend. As shown in Fig. 4 the lower ports such as the port 21' is only sufficiently large to permit passage of the shank of the fastening device whereas the upper slot 20' is sufficiently large to permit passage of the head of such device. In Fig. 4 the fastening means comprises an ordinary screw eye having the head 25' and a threaded shank 24'. The upwardly diverging margins 26' and 27' of the eye cooperate with the edges of the slot 20' in exactly the same manner as has been described in connection with Figs. 2 and 3. Such screw eyes may be used in a tubular member such as is shown in Figs. 1, 2 and 3, or instead of a tube, the body member or rod may be in the form of a hollow element of rectangular section illustrated in Fig. 5 at 10'. It will be noted that the screen receiving slit 11' is in one of the walls and extends laterally away from the opposing aligned ports 20' and 21'.

Ordinarily two or three screw eyes or other fastening devices provide adequate holding power to a device for a normal screen used in dwellings.

The tubular member is preferably made of resilient metal and is relatively stiff from end to end, and as previously indicated, acts as a tensioning pinch bar.

The tube form of device illustrated in Figs 1, 2 and 3 may be readily made from sheet aluminum alloy, the ports and slots being punched out while the stock is flat and such stock then rolled into a tube, the longitudinal edges of such ribbon stock forming the slit 11 through which the end portion of a screen may be readily inserted. A similar mode of manufacture may be utilized in making the holding rod of rectangular cross-section illustrated in Fig. 5.

It is to be remembered that various fastening means may be used instead of the flat-headed members 25 and 25'. The tubular member may be provided with a plurality of longitudinally spaced virtually diametrically aligned ports (the end-to-end slit being laterally displaced from a plane passing through such ports) and each of the fastening means may comprise a table-type lag bolt, the lower end being provided with wood screw threads while the top is provided with machine threads. After said lag bolts are screwed into the sill or frame and the tubular member is placed with such bolts extending through the aligned ports, wing nuts may be threaded into the upper ends of the lag bolts to press against the tubular member and grasp and tension the screen.

Attention is called to the fact that when the heads of the fastening means illustrated in Figs. 1–3 are in alignment with the slots 20 and 21, the tubular member can be readily removed, without the necessity of completely unscrewing the fastening means. Furthermore, the term "screening" as used herein is not limited to so-called wire insect screening, since the devices of this invention may be used to position and tension any sheet material such as translucent or transparent resinous sheeting, cloth or the like for use in greenhouses, animal houses, etc.

All changes and modifications coming within the scope of the appended claims are embraced thereby.

I claim:

1. Screen attaching and tensioning means comprising: a hollow tubular member provided with a continuous open ended, lateral slit extending longitudinally the full length of the member, said hollow member being adapted to receive a thickened end portion of a sheet of screening with the sheet extending through said slit; a plurality of spaced, longitudinally extending slots in said tubular member angularly and substantially uniformly displaced from said slit, a port formed in the member diametrically opposite and in alignment with each of said slots; and a fastening means extending through each pair of aligned slots and ports, said fastening means including a head provided with upwardly diverging margins, said margins cooperating with certain edges of the associated slot and thereby reducing the diameter of the member and narrowing the slit therein to thereby grasp and tighten the screen material extending from said slit.

2. Screen attaching and tensioning means comprising: a hollow tubular member provided with a continuous open ended, lateral slit extending longitudinally the full length of the member, said hollow member being adapted to receive a thickened end portion of a sheet of screening with the sheet extending through said slit; a plurality of spaced longitudinally extending slots in said tubular member, a port formed in the member diametrically opposite and in alignment with

each of said slots; and a fastening means having a threaded shaft adapted to extend through said port, each fastening means being provided with a relatively flat head including margins diverging upwardly from said shank, said head being slidable through said slot when in alignment therewith and said diverging margins being arranged to selectively cooperate with the edges of the associated slot to reduce the diameter of the tube and narrow the slit and depress the tube when said head is turned into a plane at an angle to said slot, whereby the screen is placed under tension.

3. Screen attaching means of the character stated in claim 2 wherein the screen receiving slit is laterally displaced from a plane passing through said slots and ports.

4. Screen attaching means of the character stated in claim 2 wherein the tubular member is of resilient metal, whereby said member is relatively stiff and tensioning pressure of said fastening means is distributed along the entire length of the slit.

5. Screen attaching and tensioning means comprising: a hollow tubular member of resilient metal, said member being provided with a continuous open-ended slit extending longitudinally the full length of the member and adapted to receive the end portion of a sheet material; a plurality of virtually diametrically opposed ports spaced longitudinally of the member, said continuous slit being laterally displaced from a plane passing through said ports; and a fastening means extending through each pair of opposed ports, one end of each fastening means being threaded and attachable to a fixed support, and the other end of the fastening means carrying a head movable into contact with the tubular member adjacent the port associated with the fastening means to apply pressure on the tubular member tending to narrow the slit and depress the member.

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