Feb. 13, 1951 W. J. THIES 2,541,971

CLOSURE ASSEMBLY

Filed Dec. 29, 1945 2 Sheets-Sheet 1

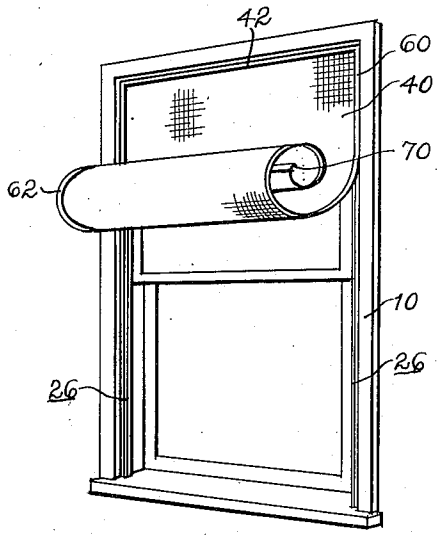


FIG. 1

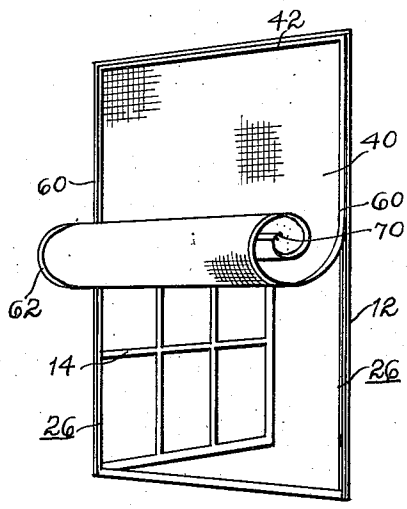


FIG. 2

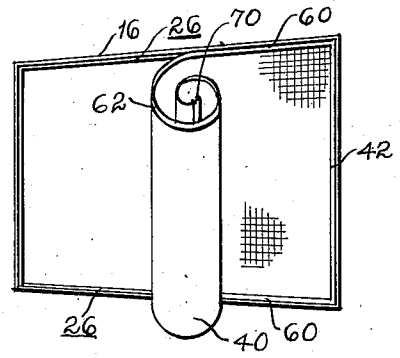


FIG. 3

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CLOSURE ASSEMBLY

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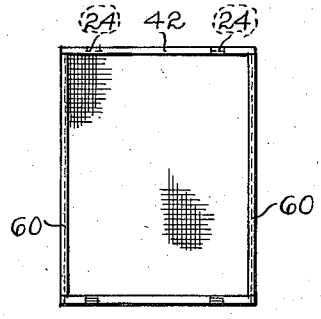


FIG. 4

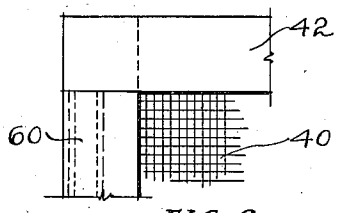


FIG. 6

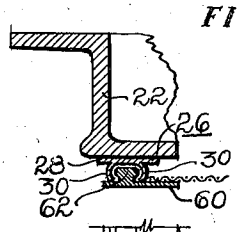


FIG. 8

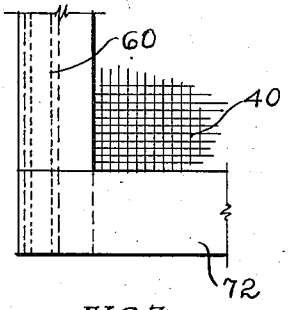


FIG. 7

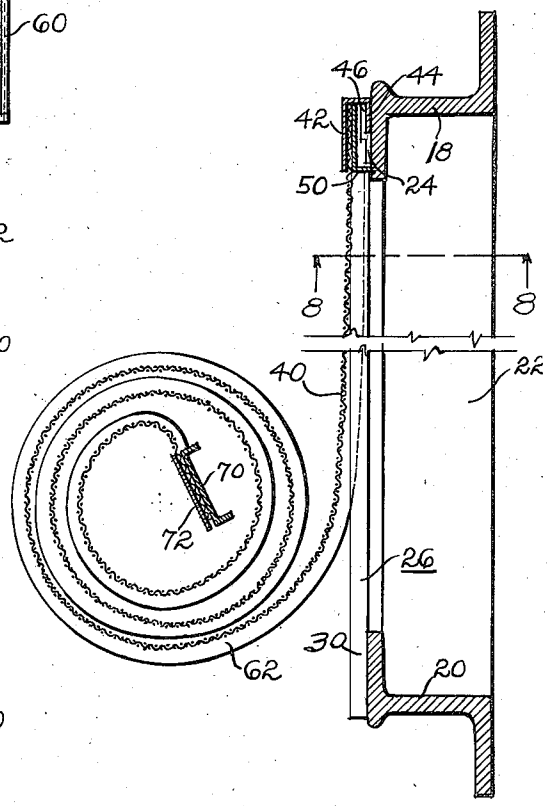


FIG. 5

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Patented Feb. 13, 1951

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UNITED STATES PATENT OFFICE

2,541,971

CLOSURE ASSEMBLY

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Application December 29, 1945, Serial No. 638,137

2 Claims. (Cl. 160—369)

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This invention relates to a closure assembly and more particularly to a flexible sheet material member that is removably mounted.

An object of this invention is to provide a sheet material member, such as a screen, that may be transparent, translucent or opaque, that may or may not permit the circulation of air therethrough, which sheet material member is removably mounted in position, having at least two of the margins continuously secured in position.

Another object of this invention is to provide a flexible closure member that is removably secured along one side of an opening and snapped into position by the use of continuous snapping members along two opposite margins, holding the flexible member in position.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

Referring to the drawings:

Figure 1 is a perspective view of a conventional wood window frame provided with a screen that has been partially removed and rolled.

Figure 2 shows a modified window, which may be a steel casement window, showing the screen partially removed.

Figure 3 is another modification wherein the screen is secured along the top and bottom margins of the window, showing the screen partially removed.

Figure 4 is a perspective view showing the screen in position over a window.

Figure 5 is an enlarged cross sectional view showing the screen partially removed.

Figure 6 discloses an upper corner of the screen shown in Figure 5.

Figure 7 discloses a lower corner of the screen shown in Figure 5.

Figure 8 is a fragmentary cross sectional view taken substantially on the line 8—8 of Figure 5.

In the drawings, the reference numeral 10 indicates a conventional window frame made from wood and utilizing double hung window panes. In Figure 2 a metal window frame 12 has been shown, provided with a hinged glazed window closure 14. In Figure 3 the schematic frame 16 has been shown, wherein the screen is mounted horizontally, in a manner that will appear more fully from the description that follows.

The details of the window screen have been shown in Figures 5 to 8 inclusive. The screen assembly will be described in connection with a

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metal frame including the horizontal mullion bars 18 and 20 and the vertical mullion bars 22. The horizontal mullion bar 18 is provided with a pair of metallic hook-shaped clips 24 secured to the face of the mullion bar 18. As may best be seen by referring to Figure 4, one clip 24 is mounted adjacent each end of the screen assembly. Instead of hook-shaped clips, any other suitable retaining means may be used to secure the margin of the screen in position.

The vertical mullion bars 22 are each provided with a channel-shaped member 26, having the flange portion 28 secured to the face of the mullion bars 22. The sides 30 of the channel-shaped member 26 are preferably arcuate and terminate in slightly reentrant portions. The sides 30 are preferably made from resilient material, so as to permit a slight yielding movement.

A flexible screen 40, which has been shown made from screen wire, for preventing the ingress and egress of insects and foreign articles and bodies, has the top margin secured to a channel-shaped portion 42, having the inner flange 44 arranged in hooked relation with the free end 46 of the hook-shaped clip member 24. Furthermore, in order to hold the screen in position, a piece of angle sheet material 50, having one flange abutting the face of the mullion bar 18 and the other flange engaging the side of the screen 40, projects into the channel-shaped member 42. Members 42 and 50 are secured together in any suitable manner. If, for example, members 42 and 50 are metallic, solder may be used. The parts may then be sweat together, or the parts may be welded together or suitable rivets may be used, so as to hold member 42, the screen 40 and member 50 together as a unitary structure. The vertical margins of the screen, as shown in Figures 5 to 8 inclusive, are provided with a flanged member 60 integral with a bead-like rib 62, extending from the top to the bottom of the screen, there being one rib along each vertical margin of the screen. The bead 62 is pressed or forced between the walls 30 of the channel members extending along the sides of the window, the walls 30 yielding sufficiently to permit the bead 62 to snap into position between the walls 30. When the beads 62 have been forced into position from top to bottom of the screen, the beads 62 are held in position by the reentrant portions of the walls 30.

A channel-like member 70 extends from one margin of the screen to the other along the bottom thereof. A sheet metal member 72 may be positioned on the opposite side of the screen, so

as to clamp the lower margin of the screen between members 70 and 72. Members 70 and 72 cooperate to give the lower margin of the screen rigidity, so as to prevent buckling of the screen along the bottom. The walls of the channel member 70 abut the face of the mullion bar 20 when the screen is in home position.

In winter when the screen is not needed, it is merely necessary to pull the beads 62 out of the channel members and remove the top portion of the screen from the hook-like members 24 along the top, so as to permit the removal of the screen, so that it may be stored in readiness for use the following season. Upon being removed, the screen may be rolled into a coil or roll, as clearly seen in Figures 1, 2, 3 and 5. By selecting materials that have an inherent resiliency, the screen automatically forms a roll. The inherent curvature causes the screen along its margins to cling to the sides of the opening when closed. When spring arrives, the screen may again be inserted by hooking the top of the screen over the hooks 24, pressing the ribs 62 between the walls 30, so as to place the screen over the window opening.

Although this screen has been shown for the purpose of illustration as a woven wire mesh screen used as a taut insect deterring closure, it could equally as well be made from any other fabricated screen or sheet material, as for example, a linen sheet member used in the window for ventilation, or it could be a transparent plastic member used as a storm window or storm door, or it could be a sheet metal member used in closing an opening, as for example, a bomb bay door in an airplane. Furthermore, the closure assembly could be used as a closure for a port hole in a vessel and in numerous other places for various purposes. The screen may be placed either on the inside or on the outside of the frame surrounding the opening.

Members 26 and 60 may be made from plastic molding material or from metal or any other suitable material. Likewise, the frame members of the screen extending above and below the screen may be made from metal or plastic material.

For some installations it may be desirable to have the channel members extend along all sides of the opening and to provide ribs along all sides of the screen member, so that the screen member is held in position throughout its periphery by ribs being seated in channels. The screen member may then be removed by removing the ribs laterally from the channel members. Furthermore, the screen may be mounted in position by reversing the operation, so as to cause the ribs to snap into the channels.

Furthermore, the beads or rib members may be attached to the sides of the opening and the channel members may be secured to the screen. If, for example, the beads or ribs were made from metal or some other rigid material, and the channel members were made from some resilient material, as for example rubber, the channel members could then be sufficiently flexible so as to be attached to the screen and be rolled with the screen.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. A flexible closure assembly for an opening surrounded by a frame, said closure assembly including a screen, means for removably attaching the screen to the top of the opening, said means including a hook member attached to the top of the frame and a channel member secured to the upper margin of the screen, one side of the channel member engaging the hook member, and means for removably securing the sides of the screen to the frame, said last mentioned means including a pair of flexible channel members having reentrant yieldable flanges forming side walls of the channels, the slots between the side walls opening outwardly, said channels being secured to the sides of the frame, and a pair of continuous length rib members fixedly attached to the side margins of the screen, said rib members being removably seated in the channel members extending along the side of the frame, the rib members being removable from the channel members by pulling the rib members outwardly to thereby permit the removal of the screen, the rib members when positioned in the channel members supporting the screen so as to provide an insect deterring closure for the opening.

2. A flexible closure assembly for an opening surrounded by a frame, said closure assembly including a screen, means for removably attaching the closure to the top of the opening, said means including a pair of interlocking members, one of which extends along the top of the frame and is fixedly attached thereto, the other being fixedly attached to the top margin of the screen, and means for removably securing the sides of the screen to the frame, said last mentioned means including a pair of flexible channel members having reentrant yieldable flanges forming side walls of the channels, the slots between the side walls opening outwardly, said channels being secured to the sides of the frame, and a pair of continuous length rib members fixedly attached to the side margins of the screen, said rib members being removably seated in the channel members extending along the side of the frame, the rib members being removable from the channel members by pulling the rib members outwardly to thereby permit the removal of the screen, the rib members when positioned in the channel members supporting the screen so as to provide an insect deterring closure for the opening.

WALTER J. THIES.

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