

**Feb. 7, 1939.**

**F. DOMINICK**

**2,146,251**

WINDOW SCREEN

Filed April 17, 1937

2 Sheets-Sheet 1

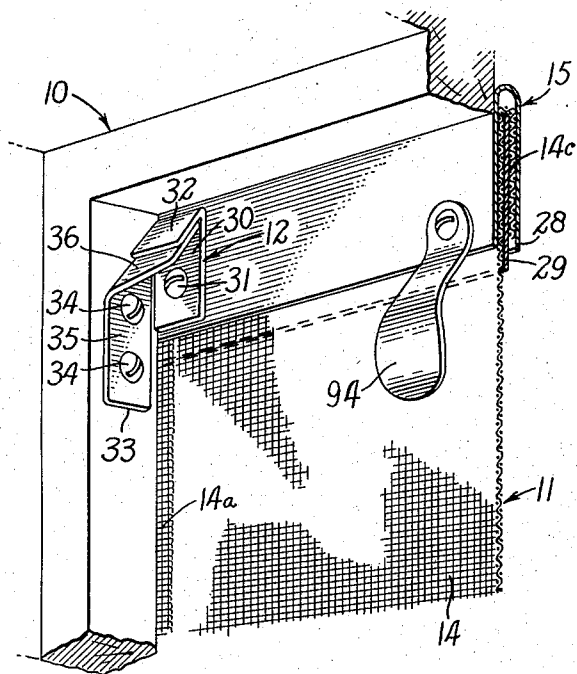
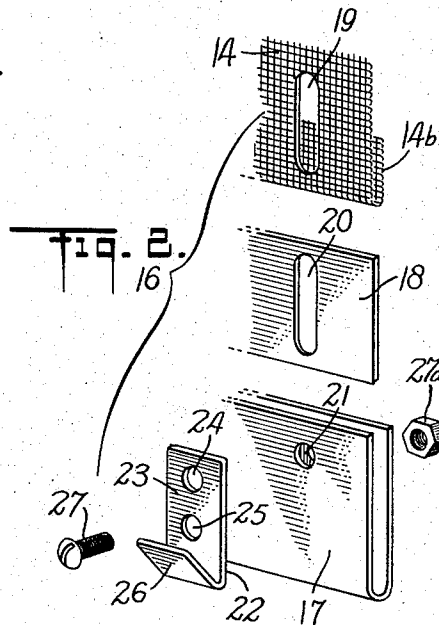
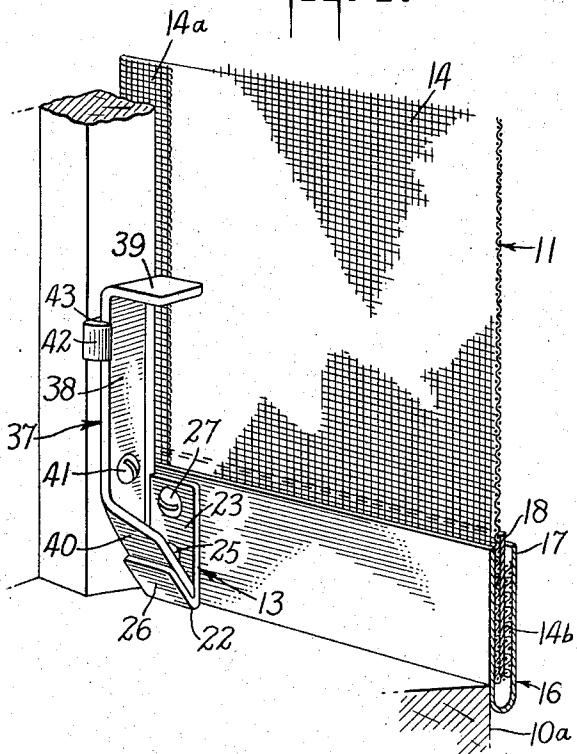
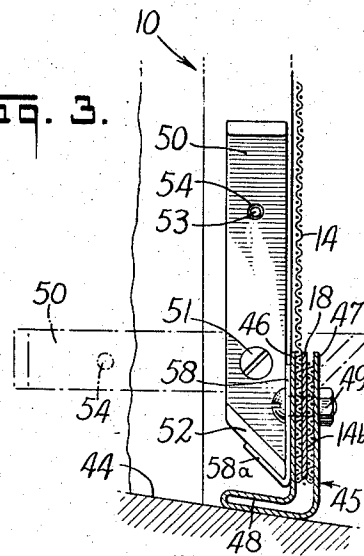


Fig. 1.



719.3.



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2 Sheets-Sheet 2

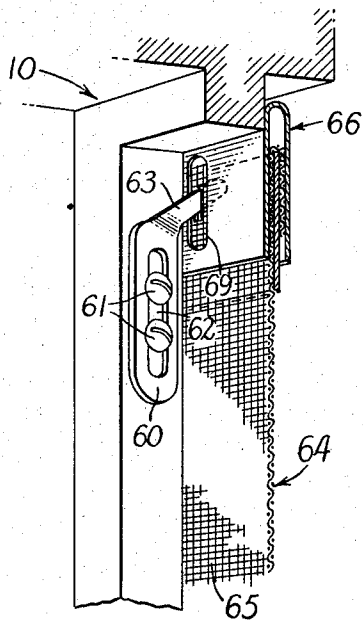


Fig. 4.

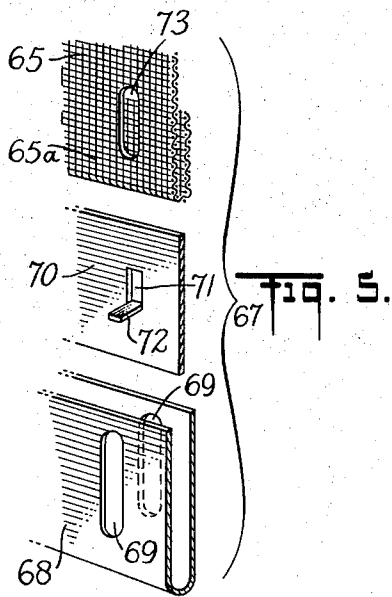
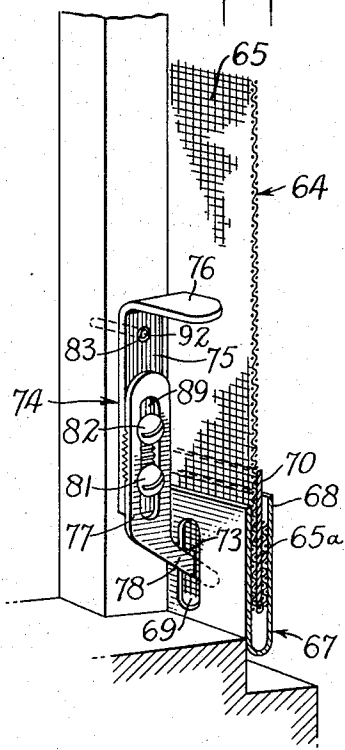
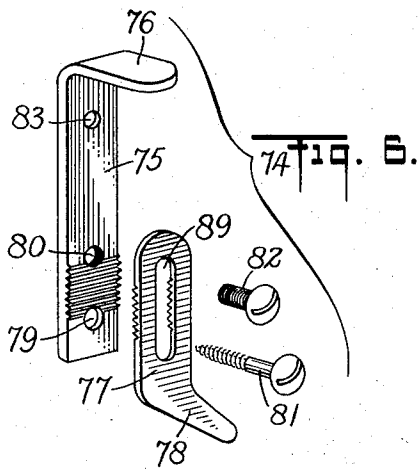


Fig. 5.



74-19.6.

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## UNITED STATES PATENT OFFICE

2,146,251

## WINDOW SCREEN

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Application April 17, 1937, Serial No. 137,562

9 Claims. (Cl. 156—14)

This invention relates to a window screen, and more particularly to an adjustable screen which may readily be installed in or removed from a window frame.

5 It is among the objects of this invention to provide a window screen which is inexpensive to manufacture, light in weight, and thoroughly durable under conditions of rigorous use. Also, to provide a readily adjustable screen which is easily installable in a window frame in such a manner as to seal the frame against entrance of insects and the like.

Other objects will be in part apparent and in part pointed out hereinafter.

15 The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings in which are shown three of the various possible embodiments of my invention,

25 Figure 1 is a fragmentary perspective view of my screen installed in a window frame;

Figure 2 is a fragmentary exploded perspective view of a portion of my screen;

Figure 3 is a fragmentary sectional elevation of a portion of a modification of my screen;

30 Figure 4 is a perspective view, similar to Figure 1, of another modification of my screen;

Figure 5 is a fragmentary exploded perspective view of a portion of the screen shown in Figure 4; and

35 Figure 6 is an exploded perspective view of the lever bracket shown in Figure 4.

In order that certain features of my invention may be more readily understood, it might be pointed out that many removable window screens are variously deficient in failing properly to seal the window frame against the entrance of insects, and in that it is difficult, if not impossible in many cases, to install the screen in a frame the dimensions of which are not standard. Still other screens of this nature are extremely difficult to install, and necessitate the use of greater force than is possessed by the average person. Still other screens are bulky and cumbersome and difficult to store when not in use. It is accordingly a further object of this invention to provide a window screen which rectifies the above conditions.

Referring now to Figure 1 of the drawings, the left-hand side of a window frame is generally indicated at 10, it being understood that

the right-hand portion of the frame and also the screen installed therein are substantially identical. A screen, generally indicated at 11, is supported in and secured to frame 10 by upper and lower cooperating brackets generally indicated at 12 and 13 respectively.

Screen 11 comprises a sheet of screening 14, the frame abutting edge 14a of which is preferably folded over or hemmed to provide a lapped edge which seats firmly and smoothly against frame 10 when the screen is installed, and to provide additional strength to reinforce the edge of the screen when under strain. The upper and lower edges of screen 14 are secured in supporting strips generally indicated at 15 and 16. These strips being substantially identical, lower strip 16 only will be described hereinafter.

Still referring to Figure 1, strip 16 preferably comprises a U-shaped strip 17 formed in any suitable manner, preferably from sheet metal of a desired gauge. The lower edge 14b of screen 14 is folded about a supporting strip 18 and both are clamped between the legs of U-shaped strip 17. As is more clearly shown in Figure 2, screen edge 14b and strip 18 have formed in the opposite ends thereof slots 19 and 20 respectively, which register with one another and with strip holes 21 when the screen and strip are assembled.

A bracket 22 (Figure 2) has a vertical portion 23, through which holes 24 and 25 extend, the bracket also being provided with a portion 26 which extends upwardly and inwardly (see Figure 1) with respect to the window frame 10. A suitable bolt 27 (Figure 2) may extend through 35 either of holes 24 or 25, through hole 21 in U-shaped strip 17, and through slots 19 and 20 in the screen and intermediate strip 18, and has threaded thereon a nut 27a which holds the bracket, screen and strips in assembled relationship. When nut 27a is taken up tightly on the bolt, the several parts are firmly secured together, but under certain circumstances, as will be pointed out hereinafter, bolt 27 may be loosened to permit relative movement between strip 17 and intermediate strip 18 with its surrounding screen portion 14b to permit lengthening or shortening of screen 11 as a unit.

It accordingly appears, with reference to Figure 1, that upper strip 15 similarly comprises a 50 U-shaped strip 28, having disposed therein an intermediate or supporting strip 29, about which is wrapped a portion 14c of screen 14. A bracket 30 (similar to bracket 22) is secured to strip 15 by a bolt 31, which extends through suitable 55

holes and slots in the strips and screen, as in the case of strip 17, bracket 22 and bolt 27, as shown in Figure 2. The upper and lower brackets on the right-hand portion of screen 11 are similar to brackets 12 and 13 respectively. It should be noted, however, that whereas lower brackets 13 are provided with upwardly and inwardly extending portions 26, similar portions 32 on upper brackets 12 extend inwardly and downwardly with respect to frame 10, for a purpose hereinafter explained.

It may thus be seen that screen 14 is secured at its upper and lower corners respectively to the extremities of strips 15 and 16. Likewise the extremities of upper and lower intermediate strips 29 and 18 are also secured to the extremities of U-shaped strips 28 and 17 respectively. It follows that the central portions of intermediate strips 29 and 18, and the screen portions that surround these strips are unsupported by their respective U-shaped strips, and accordingly are free to move relatively under stresses.

Frame 10 (Figure 1) has secured in its opposite upper corners supporting brackets 33, these brackets being secured to the frame by screws 34, which extend through a vertical portion 35 of the bracket into the frame. The upper portion of each bracket 33 is provided with a downwardly and inwardly inclined portion 36, which cooperates with downwardly and inwardly inclined portion 32 of each bracket 12 in the installation of the screen. Inclined portions 32 and 36 in cooperation perform the double function of drawing screen 11 inwardly and downwardly against frame 10, and accordingly effect a tight engagement between strip 15 and adjacent portions of frame 10.

In the opposite lower corners of frame 10 (Figure 1) I have provided lever brackets generally indicated at 37, each comprising an arm portion 38, from the ends of which extend respectively a finger piece 39 and an engaging or operating portion 40. Operating portion 40 extends downwardly and outwardly of the frame to cooperate with inwardly and upwardly extending portion 26 of bracket 22 when lever bracket 37 is pivoted about a screw 41 extending through arm 38 of the bracket into frame 10.

Thus when upper strip 15 of screen 11 is mounted in frame 10 by the cooperation of inclined portions 36 and 32 of brackets 33 and 30, lower strip 16 may be drawn into a position wherein operating arm 40 of lever bracket 37 may engage portion 26 of bracket 22. Upon clockwise pivoting of lever 37, lever portion 40 and bracket portion 26 coact to draw lower strip 16 of the screen inwardly and downwardly of the frame into tight engagement with screen stop 10a. When strip 16 is thus positioned, considerable tension is exerted on screen 14 and this tension not only forces overlapped screen edge 14a into tight sealing engagement with frame 10, but also causes the center portions of intermediate strips 18 and 29 to bow slightly. This bowing action relieves a certain amount of the tension on the screen, not only preventing tearing thereof, but also permitting unwrinkled installation of the screen. It should be noted that this tensioning of the screen will not result in stripping the threads of upper and lower bracket bolts 31 and 27, nor will it cause upper and lower frame bracket screws 34 and 41 to be pulled out of the frame as these bolts and screws are so placed that the strain is exerted at right angles to the axes of the bolts and screws. It should also be noted

that while intermediate upper and lower strips 29 and 18 may bow slightly, the window frame remains effectively sealed because of the rigidity of upper and lower U-shaped strips 28 and 17, which do not move relative to the frame 10.

In order to prevent lever bracket 37 from springing out of screen holding position after the screen is installed, I provide a suitable detent 42 or the like having a latch portion 43 behind which arm portion 38 of the lever bracket may catch.

In brief, the installation of screen 11 may be effected as follows: Portions 32 and 36 of upper brackets 30 and 33 loosely support screen 11 subsequent to lifting the screen in place by a suitable finger piece 39. Thereafter, the lower edge of the screen is drawn into position where lever bracket portions 40 may engage portions 26 of lower brackets 22. Lever brackets 37 are then swung in clockwise direction, which draws upper strip 15 of the screen inwardly and downwardly against frame 10, and at the same time lower strip 16 is drawn inwardly and downwardly against screen stop 10a. This action tensions the screen and causes its upper and lower edges to bow slightly at their central portions, and accordingly move outwardly of the respective U-shaped supporting strips. This tensioning of the screen also forces overlapped edges 14a thereof into tight sealing engagement with frame 10.

As noted above with reference to Figure 2, nuts and bolts 28 and 27 may be loosened to permit relative movement between intermediate strip 18 and U-shaped strip 17. As each corner of screen 11 is similarly provided the overall vertical dimension of screen 11 may be varied at will in accordance with the vertical dimension of the frame 10 to which the screen is fitted. Thus if frame 10 is slightly over standard dimensions, the screen may be adjusted to compensate.

Referring now to Figure 3, in which I show a modification of the lower supporting strip of my screen, frame 10 is partially formed by an inclined sill 44, which is not provided with a screen stop similar to screen stop 10a (Figure 1). To accommodate such a sill, I provide the screen with a lower supporting strip generally indicated at 45 (Figure 3) in the general form of a reverse L, as viewed in Figure 3. Thus strip 45 comprises an inner portion 46, an outer portion 47 and a seat portion 48. Between portions 46 and 47 of strip 45, I dispose intermediate strip 18 and lower screen portion 14b in the manner described hereinabove with respect to strip 16 (Figure 2).

Strip 45 is provided with a bracket 58 substantially similar to bracket 22 (Figure 1), bracket 58 accordingly being secured to strip 45 by nut and bolt 49. A lever bracket 50 is pivoted to frame 10 by a screw 51, and has an operating portion 52 substantially similar to portion 40 of lever bracket 37. Thus, clockwise movement of bracket 50, as viewed in Figure 3, causes downward and inward movement of strip 45 and seat portion 48, causing the latter to seat tightly against sloping sill 44.

Lever bracket 50, as shown in the dotted line position in Figure 3, moves from such position to the full line position in sealing the lower edge of the screen against the window frame. Lever bracket 50 may be held in its closed position by a pin 53 driven into frame 10, and which extends through a hole 54 in the lever when the lever is in closed position.

Here again it should be noted that movement

of the lever bracket 50 from its dotted line or open position to its full line or closed position (Figure 3) causes engagement between portion 52 of the lever and portion 58a of the screen bracket to move strip 45 of the screen downwardly and inwardly to tight sealing engagement with the window sill 44, and tensions the screen vertically to cause a slight bowing of the screen and intermediate strip 18 at the central portions thereof, as pointed out above with respect to the embodiment shown in Figures 1 and 2.

It will now appear that each edge of the screen tightly engages in sealing relationship adjacent portions of the frame in which the screen is installed, and further that although the screen is under substantial tension when installed, the installation may be readily accomplished without the necessity of using undue force. Furthermore, the bowing of the central portions of the upper and lower edges of the screen prevents tearing of the screen, but yet does not permit the U-shaped strip 17 to bow, thus maintaining a sealing engagement between the strip and window sill.

Referring now to Figure 4, in which is shown another modification of my screen, a pair of brackets 60 are secured in the upper corner of window frame 10 by means of screws 61 extending through a slot 62 formed in each bracket. Bracket 60 has an arm 63 which extends outwardly and upwardly of frame 10, and it is upon these arms that a screen generally indicated, at 64 is supported, as will be described below.

Screen 64 comprises a sheet of screening 65 to the upper and lower edges of which are secured respectively supporting strips generally indicated at 66 and 67, which are substantially similar. Accordingly, strip 67 only will be described hereinafter.

As is better shown in Figure 5, strip 67 comprises a U-shaped strip 68 having slots 69 formed in the ends thereof, and an intermediate strip or plate 70 having holes 71 formed in and projections 72 extending from its ends. The lower edge 65a of screen 65 is provided with a hole 73 and this edge of the screen is wrapped around strip 70, and both are inserted between the legs of U-shaped strip 68 with projection 72 extending through one of slots 69 to limit relative movement between strips 68 and 70. It will be understood that each end of strips 66 and 67 (Figure 5) are formed as described with respect to Figure 5.

Each bottom corner of frame 10 (Figure 4) is provided with a lever bracket generally indicated at 74, this bracket comprising (Figure 6) a lever arm 75 having a finger piece 76 extending therefrom and an operating or engaging plate 77 from which extends downwardly and inwardly with respect to the window frame an operating arm 78. A slot 89 is formed in plate 77 and through this slot which registers with suitable holes 79 and 80 in lever 75 extend a mounting and pivot screw 81 and a securing screw 82. Screw 81 (Figure 4) is threaded into the window frame, whereas screw 82 is threaded into lever hole 80 to secure plate 77 thereto. Thus, as is shown in Figure 4, operating bracket 74 pivots about screw 81 to swing plate arm 78 into and out of operative position.

In mounting screen 64 on window frame 10, upper strip 66 is manipulated so as to pass bracket arms 68 through strip slots 69 and 71 and screen hole 73. The weight of the screen causes it to slide downwardly on bracket arms 63 into engagement with frame 10. Thereafter

plate arm 78 of operating bracket 74 is inserted through the slots and holes in lower strip 67, and when bracket 74 is pivoted in clockwise direction (as viewed in Figure 4) strip 67 is forced downwardly and inwardly into tight engagement with the window frame. When so installed, screen 65 is tensioned so that its vertical edges engage closely the vertical edges of frame 10, whereas U-shaped strips 68 may move relative to the window frame. It should also be noted that because of the possible relative movement between U-shaped strips 68 and intermediate plates 70, strips 68 will always lie in tight engagement with the window frame, whereas plates 70 may bow slightly at their center portions without pulling the screen out of engagement with the frame.

Furthermore, by reason of the relationship between lever 75 and plate 77, these two parts may be adjusted to facilitate fitting the screen to the frame. Further in this connection, if the dimensions of the frame vary from standard, the screen may still be effectively fitted by reason of the fact that U-shaped strips 68 are movable relative to the screen as a whole.

As in the embodiment shown in Figure 3, a pin 92 (Figure 4) is preferably driven into frame 10 to fit within a hole 83 in lever 75 when operating bracket 74 is moved into closed position, as shown in Figure 4.

It may accordingly be seen that I have provided a screen which efficiently fulfills the several objects hereinabove described in a thoroughly practical manner.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth, or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. A screen for a window frame or the like comprising a sheet of screening, and means for tensioning and holding said sheet of screening in assembled relationship with said window frame, said means including a swingable part and a pivot therefor on a vertical side of said frame and engaging said screen to draw said screen downwardly and inwardly into sealed relationship with said window frame.

2. As an article of manufacture, a window screen comprising a sheet of screening, a metal strip secured to each of a pair of edges of said sheet, a pair of metal strips disposed on either side of each of said first-mentioned strips, and means for positively holding each set of strips in assembled relation, said means including clamping parts releasable to permit relative transverse movement between each inner strip and its surrounding strips, whereby the overall length of the screen may be varied at will.

3. As an article of manufacture, a supporting strip, a sheet of screening having one edge folded over said supporting strip, a U-shaped strip, said supporting strip and folded over screen edge being disposed within said U-shaped strip, and means securing said strips together, said means including parts extending through opposite ends of said strips to hold said ends against movement, the central portions of said supporting strip and said U-shaped strip being unconnected whereby the portions of the strip between its ends are bowable relative to adjacent portions of said U-shaped strip from forces exerted on the screen normal in the plane thereof.

4. As an article of manufacture, a sheet of screening, a supporting strip, and means securing said strip at its extremities to said sheet, said strip and sheet being centrally unconnected  
5 whereby said sheet bows at its central portion adjacent said strip from forces exerted on said sheet normal to said strip.

5. As an article of manufacture, a sheet of screening, a plate secured to each of the upper  
10 and lower edges only of said screening, and a U-shaped strip disposed about each of said plates and movable relative thereto to vary at will the length of said screen.

6. As an article of manufacture, a sheet of  
15 screening, a plate secured to each longitudinal edge of said screening, and a U-shaped strip disposed about each of said plates and movable relative thereto to vary at will the over-all length of said screen, said screening, said plates and said  
20 strips having registering holes formed in each corner thereof.

7. A screen for a window frame or the like comprising, a sheet of screening, means securing the upper edge of said sheet to said window frame,  
25 and means operable to secure the lower edge of said sheet to said window frame, said last-mentioned means including a member and a pivot therefor on a vertical side of said frame, said member being pivotable in a plane substantially  
30 normal to the plane of said sheet of screening,

said member having a portion for engaging said sheet to draw said sheet downwardly and inwardly against the frame upon pivotal movement of said member.

8. A screen for a window frame or the like comprising, a sheet of screening, means securing the upper edge of said sheet to said window frame, means operable to secure the lower edge of said sheet to said window frame, said last-mentioned means including a member and a pivot therefor  
10 on a vertical side of said frame, said member being pivotable in a plane substantially normal to the plane of said sheet of screening, said member having a portion for engaging said sheet to draw said sheet downwardly and inwardly against  
15 the frame upon pivotal movement of said member, and means for retaining said member in the position wherein it holds said sheet of screening against said frame.

9. A screen for a window frame or the like comprising a sheet of screening, a supporting strip secured to the upper and lower edges of said sheet, each of said strips having a hole formed in each end thereof, and a plurality of brackets each having a part inclined with respect to the horizontal  
25 extending through one of said holes, said brackets being secured to the window frame to mount the screen thereon.

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