June 2, 1936. J. A. MUELLER 2,042,726

WINDOW SCREEN

Filed June 15, 1935 2 Sheets-Sheet 1

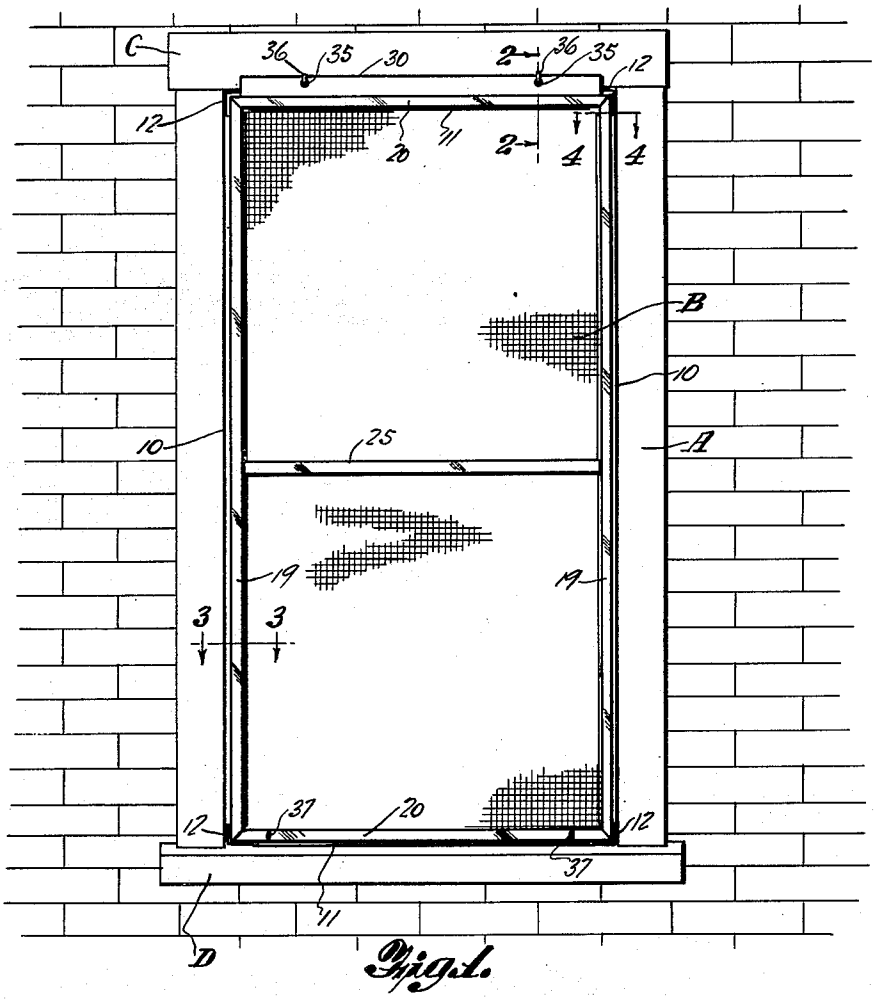


Fig. 1.

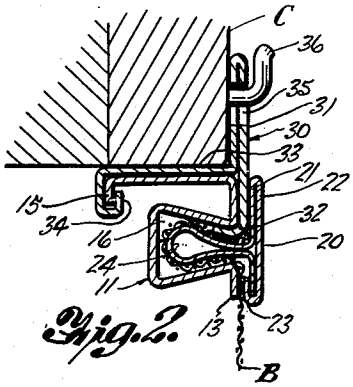


Fig. 2.

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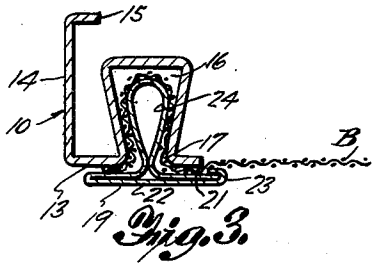


Fig. 3.

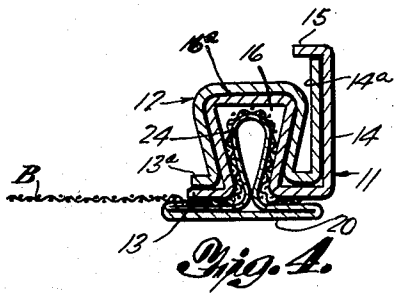


Fig. 4.

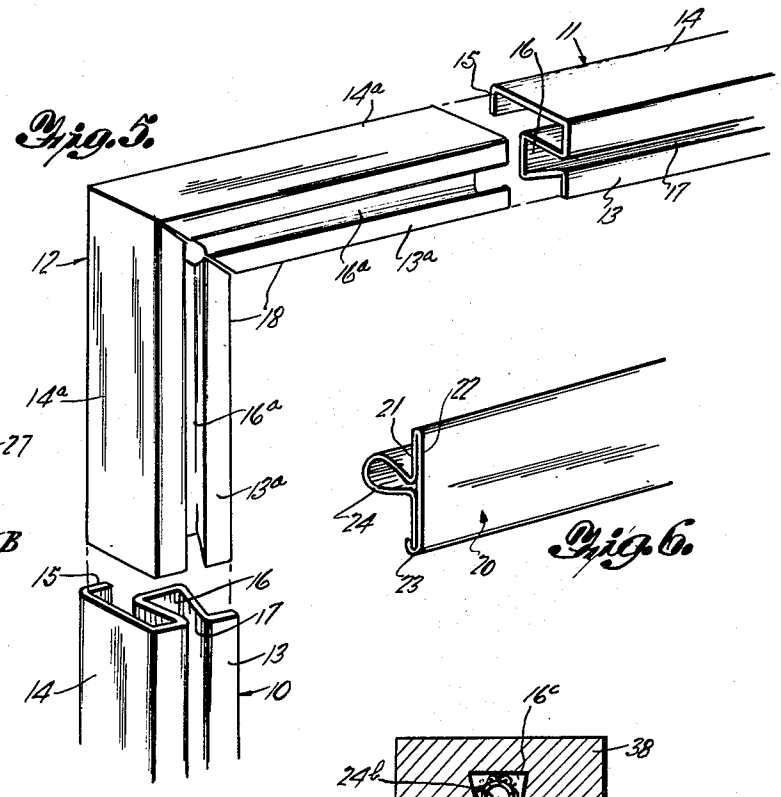


Fig. 5.

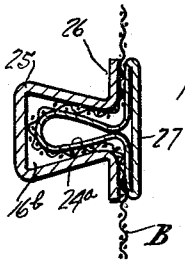


Fig. 8.

Fig. 6.

Fig. 9.

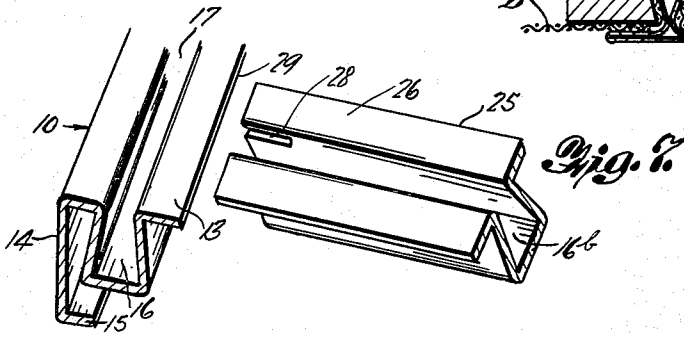


Fig. 7.

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UNITED STATES PATENT OFFICE

2,042,726

WINDOW SCREEN

John A. Mueller, Farmington, Mo.

Application June 15, 1935, Serial No. 26,712

6 Claims. (Cl. 156—14)

My invention relates generally to improvements in window screens and the main object is to provide a simple and inexpensive screen frame including novel and advantageous means for stretching and securing the screen wire or mesh to the frame.

Another object is to provide a screen made up of slidable sections and connecting corner pieces whereby the frame may be readily cut and set up to fit any size of window and adjusted to meet minor differences in size and alignment of the window.

A further object is to provide a screen frame of this kind including elongated end and side pieces conveniently and inexpensively formed by folding up sheet or strip metal so as to provide a right angle shaped beam or bar having the margin or flange of one web turned inward parallel with the other web and this latter web depressed along a medial longitudinal line to form a deep oblate groove with a restricted opening or mouth through said web, corner pieces including arms extended at right angles and of similar but smaller cross section so as to telescopically enter and frictionally engage the said end and side pieces, and screen retainer strips of length suitable to cover the ends and sides of the built up screen frame and with longitudinal medially extended beads or rolls adapted to enter and first spread apart the mouths of the grooves in the frame and then when entered to be held therein by the normal resilient return of the metal to its initial shape. The wire screen or mesh is placed flat over the screen frame prior to this placing of the retainer strips and thus the beads thereon will carry in and crimp the margins of the screen in the frame grooves simultaneously stretching the screen taut across the frame.

A further object is to provide in combination with the foregoing structure a novel hanging and fastening means for the completed screen.

With these and other objects in view the invention resides in the novel construction and arrangement of parts as hereinafter fully set forth and claimed, reference being had to the accompanying drawings wherein:

Figure 1 is an elevation of a screen constructed in accordance with my invention and in use.

Figure 2 is an enlarged section along the line 2—2 in Figure 1.

Figure 3 is an enlarged section along the line 3—3 in Figure 1.

Figure 4 is an enlarged section along the line 4—4 in Figure 1.

Figure 5 is an enlarged fragmental perspective view of one corner piece and adjacent portions of the frame.

Figure 6 is a similar view of the screen retainer strip.

Figure 7 is a similar view showing a cross bar for the frame.

Figure 8 is a cross section through the cross bar of Figure 7 and associated parts.

Figure 9 is a cross section through one side of a modified form of screen frame.

A screen constructed in accordance with my invention comprises a pair of sides or side rails designated generally at 10 and a pair of ends or end rails 11 of such length as when arranged as the side of a rectangle they will substantially fit the window frame A. The ends of the sides and ends 10 and 11 are then joined by telescopically arranged corner pieces 12 forming a rigid frame which by its slidable or telescopic connections may be nicely adjusted to fit the window frame. It is contemplated that the sides and ends 10 and 11 will be provided and stocked in a number of standard lengths which with the range of adjustment possible will fit windows of practically all sizes but it will be readily evident that the sides and ends may as well be cut to necessary length and the frame fabricated right on the job to fit each window.

Taking as an example one side or side rail 10 this may be very readily and inexpensively formed by folding and bending it up from sheet or strip metal of suitable gauge and material so that a right angled bar or shape is formed including a face web 13 and side web 14. The side web has a narrow flange 15 turned inward parallel with the face web 13 and the latter is pressed inward along a medial longitudinal line to form a screen retainer groove 16 of oblate or dove tailed cross section with a relatively restricted mouth or slot 17 opening out through the web. All four sides and ends are likewise formed.

The corner pieces 12 comprise arms 18 extended at right angles from each other and each of the same cross sectional shape as the sides and ends 10 and 11 having the face webs 13a, side webs 14a and grooves 16a but not the flanges 15. These arms 18 are also smaller than the sides and ends 10 and 11 so as to just nicely slide or telescope into the ends thereof in frictional engagement as shown. Thus a continuous rectangular frame and spring retainer groove is formed and the screen wire or mesh B of usual form is laid flat over the frame on the face webs 13 and 13a and cut to size.

Side and end screen retainer strips 19 and 20

each of length suitable to engage either the sides or ends 10 or 11 of the frame are provided and taking one side strip 18 as an example it is formed of sheet or strip metal folded medially flat back on itself to provide the two webs 21 and 22 joined at one edge by a clinched lip 23. The intended inner web 21 however is bent outwardly medially and longitudinally to form an oblate or dovetail-shaped bead or roll 24 which is of such shape and size as to fit nicely within the screen retainer grooves 16 and 16a hereinbefore described but which are calculated and adapted in entering the grooves to engage and spread the restricted mouths 17 and 17a thereof apart after which when the inherent resiliency of the metal has returned it to initial position the bead will be held in place. As the beads 24 of the strips 19 and 20 are thus forced into place they will force the margins of the screen wire B into the grooves 16 and 16a and will stretch and secure the screen as will be readily evident. At the same time the outer webs 22 of the strips 19 and 20 will cover the unsightly grooves and screen edges forming a neat, rigid and durable screen and one which is readily set up or taken apart when necessary.

In the case of a long or "double" screen such as that shown a medial horizontally extended cross bar 25 may be used and same has an outer web 26 with a groove 16b exactly as described for the screen proper. A screen retainer strip 27 is then placed across this cross bar 25 with its bead 24a passed into the groove 16b to secure the screen and cross bar together. At its ends the cross bar 25 has aligned notches 28 adapted to receive the inwardly extending margins 29 of the frame sides 10 and if desired these parts may be further secured together by rivets, screws and the like though they are not vitally necessary.

The screen retainer strips 19, 20 and 27 may be formed of thinner material than the frame proper as here shown and the beads 24 and 24a may thus compress or collapse slightly when forcing them into their grooves and then the beads when resiliently returned to initial position will aid in attaining an effective lock between screen and frame. Of course, to replace the screen wire when necessary the various retainer strips may be pried free.

For hanging the screen in the window frame A I provide an elongated hanger strip 30 of length such as to nicely fit the head C of the frame as shown. This strip 30 is likewise formed of sheet or strip metal bent and folded back on itself to form a double web 31, a hook 32 and diverging web or leg 33 terminating in a marginal hook 34. The hook 32 is adapted to engage one margin of the slot 16 in the uppermost end rail 11 while the hook 34 engages the flange 15 of the web 14 whereby the hanger strip is held to the frame with the web 31 turned upwardly. This web 31 then has apertures 35 adapted to receive hooks 36 secured in the window head C holding the screen in position. At the lower end eyes 37 are secured to receive the usual screen hooks (not shown) in the sill D to hold the screen closed.

The screen as stated may be made in any suitable size to fit any window and may be used as well as a door screen if properly constructed. Another use particularly ensuing from the fastening and stretching features would be as a curtain stretcher.

In Figure 9 is shown a section through a solid frame in lieu of that of structural section described, this frame member 38 having a groove 17c of shape and size similar to the other grooves described and adapted to receive the screen B' and bead 24b of the retainer strips in the same manner. This member 37 may be of wood or any suitable composition.

While I have herein set forth a certain preferred embodiment of my invention, it is understood that I may vary from the same in minor structural details, so as best to construct a practical device for the purpose intended, not departing from the spirit of the invention and within the scope of the appended claims.

I claim:

1. In a screen, a frame comprising sides and ends formed of sheet metal folded to provide right-angled webs, one of the said webs of each side and end having a centrally longitudinally extended groove, corner pieces comprising arms extended at right angles and of the same cross sectional shape as the said sides and ends and adapted for telescopic frictional engagement therewith to form a rectangular frame, screen wire placed over the grooved webs of the frame, spring screen retainer strips of length equal to the sides and ends of the frame, and beads extended from the inner sides of the spring retainer strips along the center thereof and entering the said grooves whereby the screen wire is secured to the frame, the said grooves having restricted openings narrower than the said beads whereby the openings will be spread apart as the beads enter and thereafter will engage and hold the beads against withdrawal.

2. In a screen, a frame comprising sides and ends formed of sheet metal folded to provide right-angled webs, one of the said webs of each side and end having a longitudinally extended groove, corner pieces comprising arms extended at right angles and of the same cross sectional shape as the said sides and ends and adapted for telescopic frictional engagement therewith to form a rectangular frame, screen wire placed over the grooved webs of the frame, screen retainer strips of length equal to the sides and ends of the frame, and beads extended from the inner sides of the spring retainer strips and entering the said grooves whereby the screen wire is secured to the frame, the said grooves having restricted openings narrower than the said beads whereby the openings will be spread apart as the beads enter and thereafter will engage and hold the beads against withdrawal, and a hanger strip including a double web with hooks to engage one margin of the groove in the upper end of the frame and the margin of the adjacent ungrooved web, and the said double web of the hanger strip having hook receiving apertures to support the screen.

3. In a device of the kind described, a frame member made of sheet strip metal and comprising right-angled webs, one of the said webs having a medially and longitudinally extended groove, a flat elongated retainer strip adapted to lie flat against the said grooved web, and a medially and longitudinally extended bead on the retainer strip adapted to enter the said groove in the frame member.

4. In a device of the kind described, a frame member comprising right-angled webs, one of the said webs having a medially and longitudinally extended groove, a retainer strip comprising two flat webs lying one against the other and clinched together along one edge and a medially and longitudinally extended bead formed out from one web of the retainer strip and adapted to enter the groove in the said frame member.

5. In a device of the kind described, a sectional rectangular screen frame including inwardly turned and longitudinally grooved webs, a flat elongated cross bar having a groove formed medially and longitudinally from end to end, the said cross bar having notches in its ends adapted to engage the inturned margins of the said groove webs of the screen frame, and screen retainer strips having beads adapted to enter the said grooves.

6. In a device of the kind described, a sectional rectangular screen frame including inwardly turned and longitudinally grooved webs, a flat elongated cross bar having a groove formed medially and longitudinally from end to end, the said cross bar having notches in its ends adapted to engage the inturned margins of the said grooved webs of the screen frame, screen retainer strips having beads adapted to enter the said grooves, and a hanger strip having a hook adapted to enter the groove in one end of the frame, and the said hanger strip having apertures for hanging the frame.

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