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WINDOW SCREEN CONSTRUCTION

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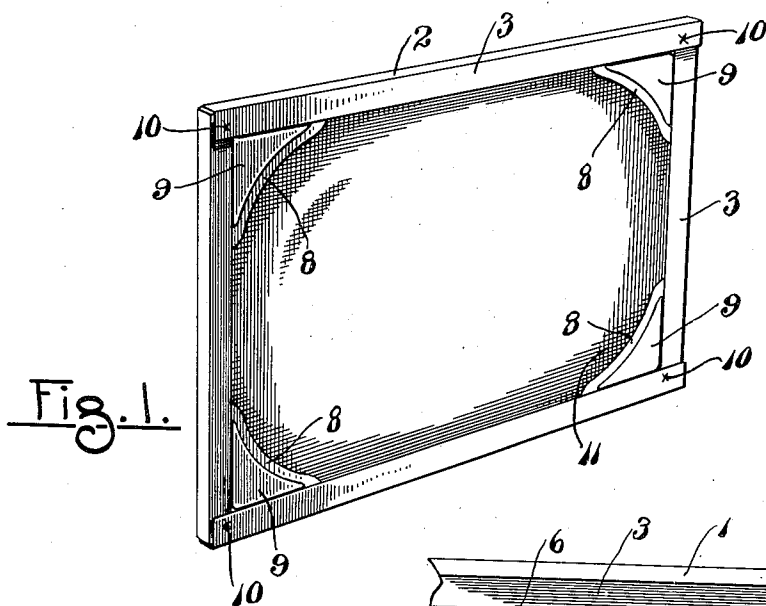
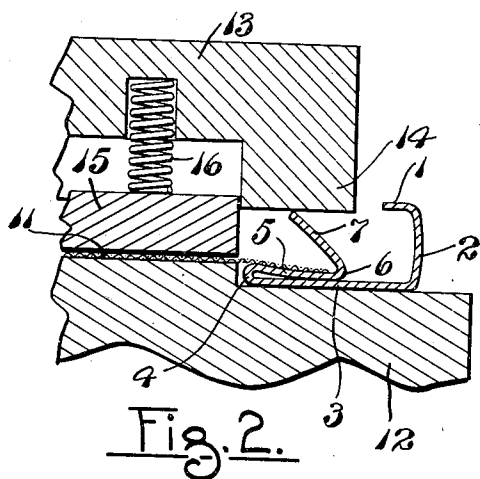
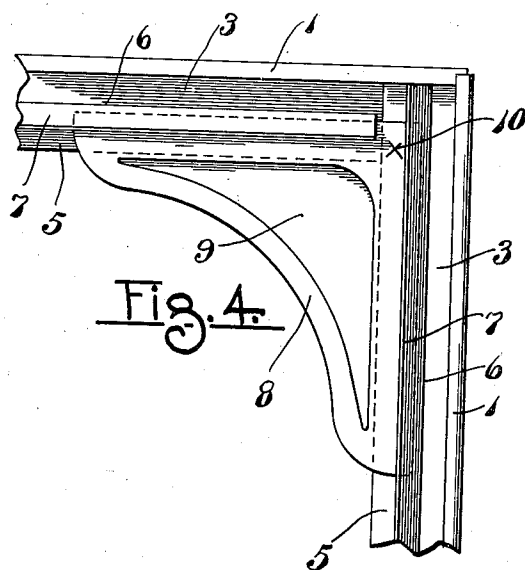
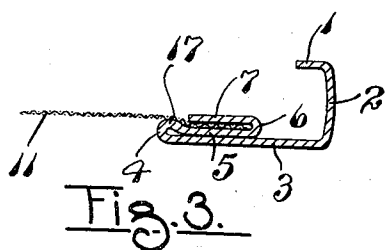


Fig. 5.

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WINDOW SCREEN CONSTRUCTION

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4 Claims. (Cl. 156—14)

This invention relates to a window screen construction, the primary object and purpose of which is to produce a window screen having a light-gauge sheet metal frame which is very strongly reinforced and strengthened at its corners to prevent any change of angle of the side and end members of the frame with respect to each other, and in which a screen is very simply and easily secured in the frame and drawn tight in the operation of securing it in place, thereby producing a strong, yet light and effective window screen having an attractive appearance and one which is of very durable construction. This screen can be made in a single unit as illustrated or it can be made in two units, each being substantial duplicates of the other, and the two telescopically connected together for an extensible screen; but the invention, insofar as the structure of the screen is concerned, is the same whether in the single unit or in the extensible double unit form.

An understanding of the invention may be had from the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of a screen unit made in accordance with my invention.

Fig. 2 is a fragmentary vertical section illustrating the manner in which the screen is clamped and secured in place in a press.

Fig. 3 is a fragmentary enlarged section through a side or end of the window screen after the completion of the connection of the screen member to the frame member.

Fig. 4 is a fragmentary enlarged elevation showing the manner in which the corner reinforcing gussets are put in place prior to the attachment of the screen element, and

Fig. 5 is a section similar to that shown in Fig. 3, showing the manner in which the screen is connected at the corner portions of the frame in association with a gusset plate.

Like reference characters refer to like parts in the different figures of the drawing.

The screen frame is made of side and end members which are substantial duplicates of each other except as to length, and each is made from a single length of thin gauge sheet metal which is initially bent into the form shown in cross section in Fig. 2. One edge portion of the metal provides a flange 1 which is continued as a web 2 and then bent into a much longer flange 3, said flanges 1 and 3 and the web 2 providing a channel. The flange at 3 is bent back upon itself, as indicated at 4, for a distance in a section 5 which is slightly over one-half of

the width of the flange 3, and then the section 5 is return-bent as at 6 and continued in a terminal flange 7 which extends upwardly and inwardly at an acute angle to the horizontal, as shown.

The side and end members of the frame which may be of a duplicate construction in cross section are placed together to make an open rectangular frame, and at the corners substantially triangular shaped gusset plates 8 are placed within the frame. These plates, at their intermediate portions and within all edges thereof, are pressed to form an embossing 9 which greatly strengthens the gusset. The side edge portions are extended over the sections 5 of the adjacent frame members. Then by a single spot-welding operation at the points indicated at 10, the gussets are secured in place and the side and end members of the frame permanently secured together.

After the frame has been thus assembled and secured it, together with a suitable rectangular piece of wire screen 11 is placed upon a die 12, which has a raised central portion to come immediately within the bends at 4 of the frame members, while said frame members are seated against the upper side of the die around such raised portion, as shown in Fig. 2 with the edge portions of the screen 11 extending over the sections 5 and within the upwardly and inwardly turned sections 7 and also over the gusset plates 8 at the corners of the frame. The punch 13 is provided with downwardly extending clinching margins 14 which come directly over the flanges 7. Within the downwardly extending margin portions 14 is a follower plate 15, spring pressed downwardly by coiled springs 16, which comes against the central portion of the screen 11, clamping it against the raised portion of the die 12. On downward movement of the punch 13 all of the flanges 7 are pressed or smashed down to horizontal position, as shown in Figs. 3 and 5, very firmly gripping the edge portions of the screen 11 between the flanges 5 and 7 and pulling the side and end edge portions of the screen over a somewhat raised hump just beyond the bend 4, thereby automatically imparting a tension to the screen in all directions. Where the screen is over the gusset plates 8, said plates are similarly formed with ribs such as 18 over the said humps 4 so that tension to the screen is imparted around all its side and end edge portions.

It will further be observed that the embossed intermediate portions 9 of the gusset plates 8 lie

within the inner edges of the metal frame and prevent any wracking of the frame or stressing thereof at the corners with consequent deformation such as would change the angle of an end member or a side member of the frame to a different angle than the right angle at which assembled.

The construction is one of very practical merit. Such structure is easily formed and assembled. The channel provided by the web 2, frame 1 and the outer portion of the frame 3 can be made to serve as a guide for a second screen unit slidably received within the channels of the upper and lower side members of the frame, in which case one of the end members of the frame would be modified somewhat to permit the telescopic reception of the frame of the other unit. However, insofar as the present invention is concerned, it is not different substantially whether the screen is completed as a single unit as illustrated or whether two of substantially similar units are telescopically connected together.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a structure of the class described, an open rectangular frame of sheet metal having inwardly extending flanges, gusset plates located within the corners of said frame and having edge portions thereof extending over said flanges, said flanges including an integral clamping means underneath which the gusset plates at said edge portions pass, a screen within said frame having its edge portions extending over the gusset plates and over said flanges, said clamping means clamping the screen at its edge portions against said frame flanges and against said gusset plates.

2. A window screen comprising, an open frame of sheet metal having parallel side and end

members, each of said frame members being of a length of sheet metal having a flat inwardly extending flange and at its inner edge bent upwardly and outwardly upon itself for a distance greater than half the width of said flange and then continued upwardly and inwardly at an acute angle, substantially triangular shaped gusset plates at the corners of said frame having edge portions extending over said return bent portions of each frame member and underneath said upward and inwardly inclined terminal portions, a screen filling the opening of said frame and having its edge portions extending over the gusset plates and underneath said upwardly and inwardly inclined terminal portions, whereby pressing said upwardly and inwardly inclined terminal portions downwardly against the screen, the screen and gusset plates are clamped in place.

3. A window screen comprising, an open rectangular frame having sheet metal sides and ends connected together at their corners, a bead at the inner edges of the frame members formed by a return bend in said edges, a screen filling the opening in the frame, a gusset plate in each corner secured thereto by a single weld at its corner, and integral clamping means on said return bent portion to clamp said screen and gusset plate against each other and to the frame.

4. The combination with a window screen having an open rectangular frame including sheet metal sides and ends connected at their corners, of a return bent portion on each of said sides and ends, integral clamping means on said return bent portion, a screen filling the opening of said frame, and a gusset plate for each corner, said plate and screen being held against each other and against the frame by said clamping means.

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