April 18, 1950 G. STEINGRUBER 2,504,602

METAL FRAME FOR WINDOW SCREENS AND THE LIKE

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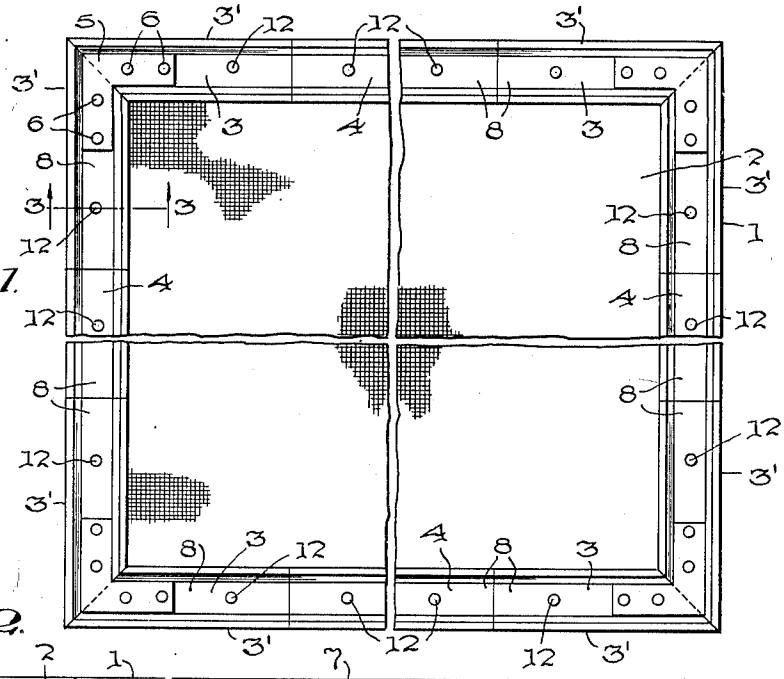


Fig. 1.

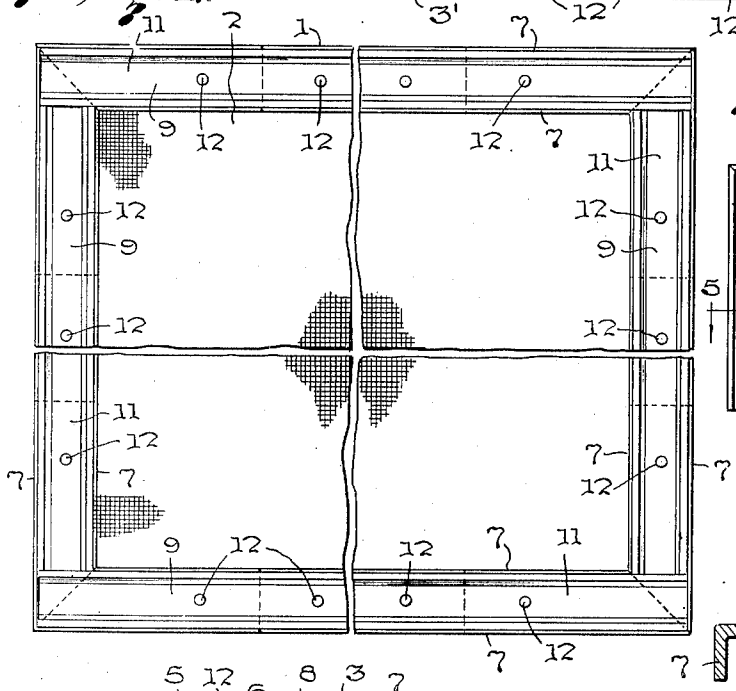


Fig. 2.

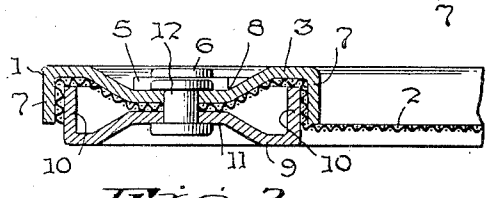


Fig. 3.

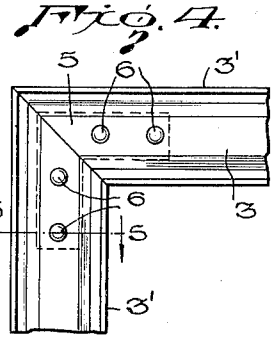


Fig. 4.

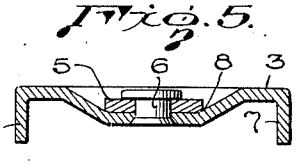


Fig. 5.

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METAL FRAME FOR WINDOW SCREENS AND THE LIKE

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2 Claims. (Cl. 160—381)

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The present invention relates to frames for window screens and the like, and more especially to an improved metal frame structure which is simple in form, relatively inexpensive in cost, neat and attractive in appearance, strong and durable, and easy to assemble and install.

A further object of the invention is to provide a frame for window screens and the like which may be made of sheet metal such as aluminum, and which may be formed by die-stamping, extrusion, or other suitable methods.

My new frame structure is primarily characterized by the provision of front and rear frame members which are provided with flanges along the outer and inner marginal edges thereof, and arranged in such transversely spaced relation to each other that the flanges of the members which form one face of the frame overlap upon the opposed flanges of the members which form the opposite face of the frame, so as to enable the screen wire or mesh to be firmly clamped between the opposed flanges when the opposed frame members are secured together by rivets or other suitable fastenings.

A still further object of the invention is to provide a metal frame structure in which the frame members forming one face of the frame consist of four corner members and four intermediate members disposed respectively between each adjacent pair of corner members, all of said members being marginally flanged along the inner and outer edges thereof, and a second set of frame members forming the opposite face of the frame and consisting of four members, each of which is of such length as to extend substantially beyond the opposite ends of the opposed intermediate members of the opposite set and to substantially overlap one arm of each of two corner members, the members of the second set also being marginally flanged along the inner and outer edges thereof so that the flanges of one set of members will overlap the flanges of the other set of members when the respective members are assembled together in the form of a complete frame unit.

Other and further objects and advantages of the invention will be hereinafter described and the novel features thereof defined in the appended claims.

In the drawing:

Figure 1 is a view in elevation of a window screen assembly having a metal frame constructed and assembled in accordance with the present invention;

Figure 2 is a view in elevation of the construction shown in Figure 1, as seen from the reverse face thereof;

Figure 3 is a sectional view on an enlarged scale, as taken on the line 3—3 of Figure 1;

Figure 4 is a fragmentary detail view on an enlarged scale of one of the corner members, as seen from the inner face thereof; and

Figure 5 is a sectional view on an enlarged scale, as taken on the line 5—5 of Figure 4.

Like reference characters designate corresponding parts in the several figures of the drawing, wherein 1 generally denotes a metal frame, and 2, a suitable screen wire or mesh mounted in said frame. The frame 1 is preferably rectangular in form, and while its construction is more particularly applicable to window screens, it is to be understood that it is not limited thereto, but also may be applied to door screens and screen assemblies for other openings in buildings and similar structures of the usual residential, commercial or industrial type.

Referring first to Figure 1 of the drawing, it will be seen that the frame 1 includes a plurality of frame members having the form of four corner members designated 3, between each pair of which is disposed an intermediate member 4, the members 3 and 4 being arranged in the form of a rectangle, and forming one side of the frame. Each corner member 3 includes two arms 3', 3' disposed at a right angle to each other and either formed integral with each other, or attached together by an overlapping angular plate 5 suitably secured thereto, as by means of rivets 6. The opposing arms of each adjacent pair of corner members 3 are disposed in alignment with one of the intermediate members 4, and each arm of each corner member is marginally flanged at the inner and outer edges, respectively, thereof, as indicated at 7, 7. The arms 3', 3' are thus channel-shaped in transverse cross-section, as will be best understood from reference to Figures 3 and 5 of the drawing, and it will be further seen that the central portion of each arm is depressed inwardly as indicated at 8, so as to form a depressed channel at the outer side of each arm and in which the angle member 5 is seated so as to lie slightly below the outer plane of each arm.

Each of the intermediate frame members 4 corresponds in transverse cross-section to the cross-section of the arms 3', 3' of the corner members 3, so that when the intermediate members are arranged between the opposing arms 3', 3' of two corner members 3, 3, they will form continuations of the arms.

At the opposite side of the frame 1, there is

provided a second set of frame members respectively designated 9, each of which is longer than the intermediate members 4 at the opposite side of the frame, so that each member 9 overlaps upon the opposing arms 3' of each adjacent pair of corner members 3. As will be seen from reference to Figure 3 of the drawing, the form of each member 9 is substantially a duplicate of the respective intermediate members 4, including the marginal flanges 10, 10 at the outer and inner edges, respectively, and the depressed central portion 11. However, the width of the respective members 9 is slightly less than that of the members 4 and arms 3', 3' of the corner members 3, so that the flanges 10, 10 of the members 9 will lie within the flanges 7, 7 of the members 4 and arms 3', said flanges 7, 7 and 10, 10 overlapping each other when the members are assembled together. Thus, the screen wire or mesh 2 is adapted to be firmly gripped between the flanges 7, 7 of the frame members 3 and 4 on one side of the frame, and the flanges 10, 10 of the members 9 at the other side of the frame, as clearly shown in Figure 3, thereby effectively stretching the screen wire or mesh 2 in all directions as the frame members are pressed together, and assuring a positive and secure attachment of the screen wire or mesh 2 to the frame 1.

In order to hold the frame members in assembled position, they may be fastened together by any suitable fastening means such as rivets 12, said rivets passing through the frame members at both sides of the frame, as well as through the screen wire or mesh 2 which is disposed intermediate the frame members at its outer edges. Where the screen wire or mesh 2 is made of metal, the metal frame members may be spot welded together in lieu of the rivet fastenings 12, but where the screen wire or mesh 2 is of a non-metallic character, either rivets, screws or similar fastenings must be employed.

It will be understood from the foregoing that the frame 1 is essentially composed of two separate sets of frame members respectively arranged at opposite sides of the frame, all of said frame members being substantially channel-shaped in transverse cross-section, with the channels of the members of the respective sets on opposite sides of the frame disposed in opposed relation to each other and fitting one within the other. The screen wire or mesh which is mounted between the frame members of the respective sets is clamped between the opposing frame members, and gripped by the overlapping of the opposing frame members along the inner as well as the outer edges of the frame members. The clamping or gripping action is thus in the nature of a double-grip upon the screen wire or mesh.

By making the frame members of aluminum, the frame assembly will be light in weight, yet strong and durable, neat and attractive in appearance, easy to assemble and install, and readily lends itself to mass production in accurate sizes and shapes. By reason of the channel-shaped cross-section of the frame members, sufficient rigidity or stiffness of the members is assured, and consequently, the frame assembly will not bend easily, sag, or get out of shape, even when subjected to rough handling. Obviously, the construction readily lends itself to the making of frames of various sizes simply by employing and assembling the corner members 3 with intermediate members 4 and opposing members 9 of different lengths, according to any given window size.

While the specific details have been herein shown and described, the invention is not confined thereto as changes and alterations may be made without departing from the spirit thereof as defined by the appended claims.

What I claim is:

1. A frame structure for window screens and the like, comprising a plurality of frame members arranged in the form of a rectangle and forming one side of the frame, and a plurality of frame members also arranged in the form of a rectangle and disposed in opposed relation to the first-mentioned frame members to form the opposite side of the frame, each of said frame members having marginal flanges along the inner and outer edges, respectively, thereof, with the flanges of the opposed frame members overlapping upon each other, the frame members which form one side of the frame including a right-angle corner member at each corner of the frame, and an intermediate straight member disposed between the opposed arms of each adjacent pair of corner members and coextensively aligned with said arms, and the frame members which form the opposite side of the frame each having the form of a single straight member of greater length than the intermediate straight members at the first-mentioned side of the frame, so as to substantially overlap the opposed arms of each adjacent pair of corner members when assembled in opposed relation to the corner members and intermediate members.

2. A window screen assembly, comprising complementary frame members of channel-shaped form arranged in opposed relation to each other, with the marginal flanges of the opposing members extended in overlapping relation to each other at the inner and outer edges, respectively, thereof, the frame members at one side of the assembly including right-angle corner members and intermediate members aligned with and abutting each pair of corner members, and the frame members of the opposite side of the assembly being continuous from each corner member to the next and substantially overlapping the corner members at their respective opposite ends, a flexible foraminous screen disposed between the opposing frame members, said screen extending to the extreme outer marginal edges of all the frame members with its marginal edges gripped between the overlapping flanges of the opposed frame members, and means for securing the opposing frame members together, with the screen gripped therebetween.

GEORGE STEINGRUBER.

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