

Oct. 13, 1931.

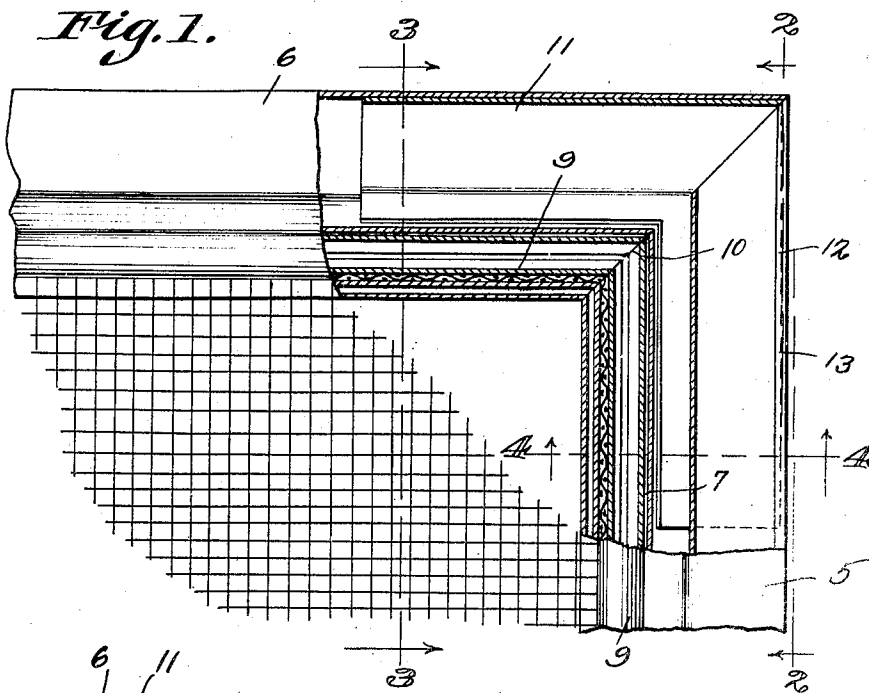
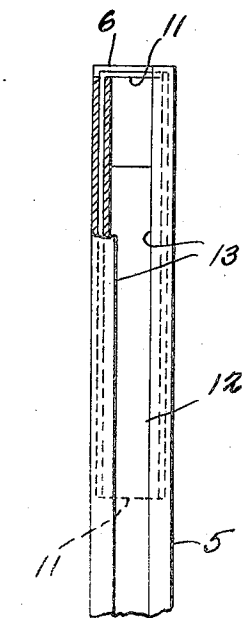
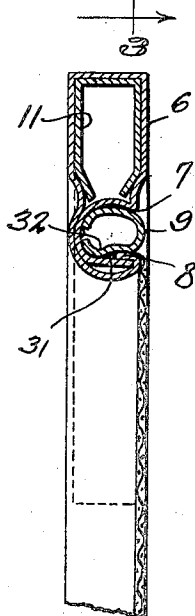
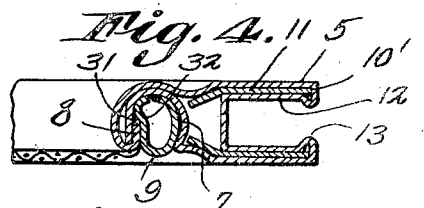
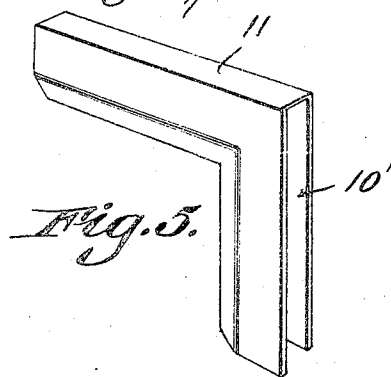
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1,827,382

METAL SCREEN

Filed Jan. 14, 1931

3 Sheets-Sheet 1



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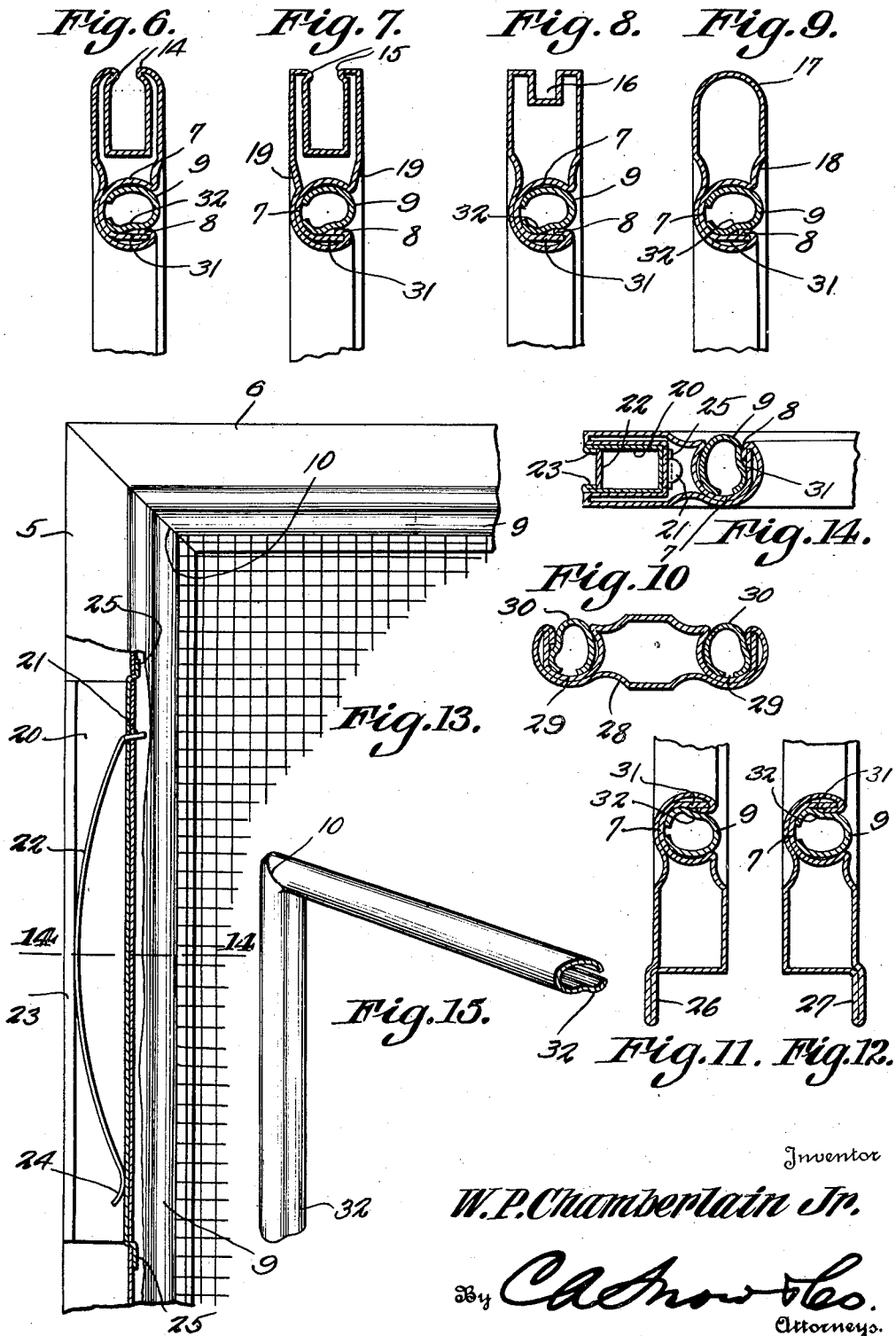
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METAL SCREEN

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3 Sheets-Sheet 2



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METAL SCREEN

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3 Sheets-Sheet 3

Fig. 16.

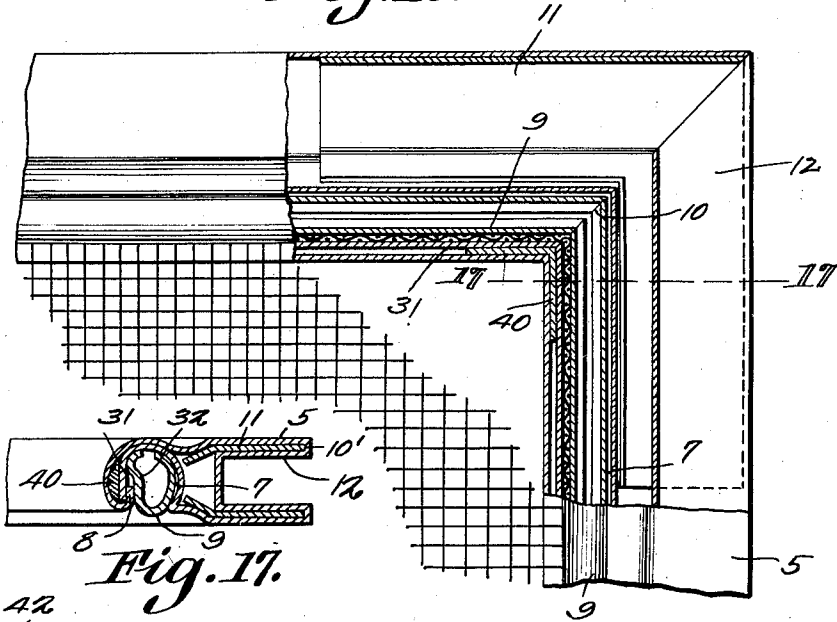


Fig. 17.

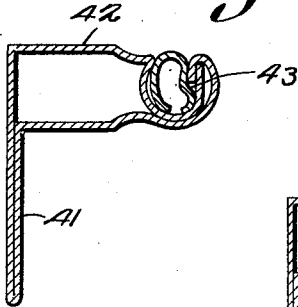


Fig. 19.

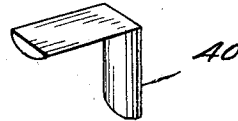


Fig. 18.

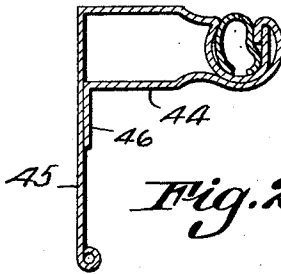


Fig. 20.

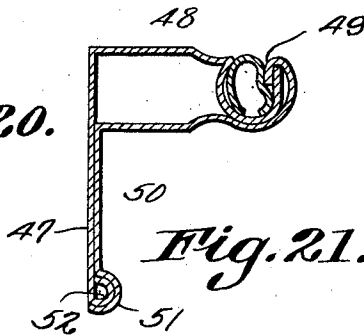


Fig. 21.

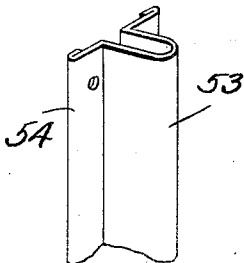


Fig. 22.

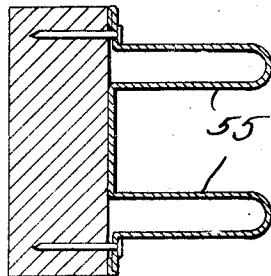


Fig. 23.

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UNITED STATES PATENT OFFICE

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METAL SCREEN

Application filed January 14, 1931. Serial No. 508,787.

This invention relates to window screens of the all metal type, the primary object of the invention being to provide a window screen which will be exceptionally strong and durable, pleasing in appearance, and formed with molded lines to blend with the architectural structure with which the screen is used.

Another important object of the invention is to provide a window screen wherein the replacement, in the field of the wire mesh or screen material may be accomplished with facility, and by persons unfamiliar with mechanics, the construction of the window screen, including a removable spline capable of being used indefinitely.

A further object of the invention is to provide a screen securing spline of a construction to readily adjust itself within the wire receiving groove of the frame, in such a way as to set up a binding action to insure against the wire mesh material becoming displaced.

A still further object of the invention is the provision of a metallic screen frame embodying angle bars to be used at the corners thereof, the angle bars acting to brace the frame at its corners.

Still another object of the invention is to provide a screen frame wherein the wire mesh receiving portion of the frame is extended beyond the frame, so that the wire mesh will be projected beyond certain hardware secured to the window frame.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a fragmental elevational view, a portion thereof being broken away illustrating one of the corner pieces.

Figure 2 is a sectional view taken substantially on line 2—2 of Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 1.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Figure 5 is a perspective view of one of the corner pieces of the frame, employed in connecting the side members of the frame.

Figure 6 is a fragmental sectional view through the frame.

Figure 7 is a fragmental sectional view through a modified form of frame.

Figure 8 is a sectional view through a further modified form of the frame.

Figure 9 is a fragmental sectional view through a still further modified form of the frame, illustrating the curved outer edge of a pivoted screen frame.

Figure 10 is a sectional view through a double wiring cross rail having wire mesh receiving grooves at opposite sides thereof.

Figure 11 is a sectional view through another form of metallic frame construction showing inside astragal.

Figure 12 is a sectional view through still another form of metallic frame construction illustrating the outside astragal.

Figure 13 is a fragmental elevational view partly in section, illustrating a spring member used in the groove at the outside of one of the bars of the frame, to set up a binding action with the guide strip over which the frame moves.

Figure 14 is a sectional view taken on line 14—14 of Figure 13.

Figure 15 is a perspective view of a spline employed in gripping the wire mesh material in the wire groove of the screen frame.

Figure 16 is a fragmental elevational view partly broken away, illustrating an angle bar positioned at the corner of the frame.

Figure 17 is a sectional view taken on line 17—17 of Figure 16.

Figure 18 is a perspective view of an angle bar used at the corner of the screen frame.

Figure 19 is a sectional view through a modified form of the invention, wherein the frame is constructed to support the wire screen surface, in spaced relation with respect to certain hardware secured to the window frame.

Figure 20 is a sectional view through another modified frame member.

Figure 21 is a sectional view through still another modified frame member.

5 Figure 22 is a perspective broken view of a screen guide, and

Figure 23 is a sectional view through a modified screen guide.

10 Referring to the drawings in detail, the window screen frame comprises side members 5 and end members 6, the same being constructed of tubular sheet metal material, the outer upper surfaces thereof being formed with grooves 7, the grooves being formed by bending the meeting ends of the sheet metal material together, as clearly shown by the drawings.

Due to this construction, a shoulder 8 is provided, which shoulder cooperates with the wire securing spline, in gripping the wire mesh material to the frame. The spline is indicated by the reference character 9, and comprises a length of sheet metal material curved to conform to the curvature of the groove of the frame, in which it is positioned, the longitudinal edges of the spline being spaced appreciable distances apart, so that they may move towards and away from each other to permit the spline to be positioned within the groove, and exert a lateral pressure on the wire mesh material at both sides of the groove, should the edges of the wire mesh material extend throughout the entire width of the groove.

35 The splines comprise strips that are substantially straight and which are used along the sides of the frame, the splines at the corners of the frame being rectangular in formation and mitered, as shown by Figure 15 of the drawings, and indicated by the reference character 10.

40 The side and end bars of the frame are held together by means of the corner sections 11 which are so constructed that they fit within the ends of the side and end members, providing a binding fit therebetween. It will be seen that the frame may be readily disassembled and assembled, by persons unfamiliar with mechanics.

50 In order that the guide grooves of the frame may be extended to the upper and lower edges of the frame, the sides of the corner sections 11 are left open, as at 10', permitting the side sections of the frame to extend to the extreme corners of the frame.

55 The outer surfaces of the side sections of the frame are formed with longitudinal grooves 12 to receive the usual guide strip of a window, and over which the screen frame slides, the outer edges of the grooves being extended inwardly as at 13, to bite into the guide strip over which the frame moves, and also to retain the friction spring 22 and prevent displacement thereof.

65 Another form of the guide groove is in-

dicated by Figure 6 of the drawings, in which the inner edges are slightly curved inwardly as at 14, while in Figure 7 of the drawings the inwardly extended portions 15 are substantially sharp, to bite into the guide strip and retain the friction spring.

Grooves 16 are formed in the side sections of another form of metallic frame, and are designed to receive guide strips of a particular construction.

75 As shown by Figure 9 of the drawings, the outer edges of the frame are curved at 17 to facilitate the opening and closing of a pivoted screen frame, and prevent binding of the screen on the pivot side thereof, and as shown in this form of the invention, curved portions 18 are provided near the spline groove of the frame, to brace the frame in such a way as to insure against twisting or binding of the frame while in use.

80 In the form of the invention as shown by Figure 7, the portions of the sheet metal material are inclined towards the groove, as at 19, providing a reinforcement at this point, and lending a beveled appearance or effect to the molding.

Positioned in the guide groove at one side of the frame, is a metallic spring retaining member 20 which is formed with an opening near one end thereof, to register with an opening formed in the side section of the frame in which the spring retaining member is positioned, the registering openings being provided to accommodate the tongue 21 formed at one end of the spring 22, which spring is curved upwardly to engage the inwardly extended ribs 23 of the spring retaining member 20. The free end of the spring 22 is curved upwardly as at 24, so that it will slide readily over the lower surface of the spring retaining member 20, and exert a pressure against the guide rib or strip, with which the window screen is used. This spring is used for retaining the screen frame in position when a screen frame is used, which is not provided with inwardly extended portions 14 and 15 as shown by Figures 6 and 7 respectively.

115 As clearly shown by Figure 13 of the drawings, tongues 25 are formed at the ends of the spring retaining member, and extend into openings formed in the bottom of the side section of the screen frame in which the spring is positioned.

120 Further modified forms of the frame are shown by Figures 11 and 12, in which construction, portions of the metallic frame are pressed together and extended therefrom, presenting a flange 26 at the inside of the frame, the flange 27 which corresponds to the flange 26 and which is shown in Figure 12 of the drawings, being constructed in a like manner except that it is formed on the opposite or outside of the screen frame. These are astragal formations to be used on adjacent 130

meeting stiles where two or more screens are used together in same opening.

Figure 10 illustrates a bar or cross rail constructed of sheet metal material and formed in such a way as to provide a body portion 28 and lateral screen grooves 29 in which the screen splines 30 are positioned, to secure the screen or wire mesh material thereto.

In Figure 16, the frame is of a construction identical with that shown by Figure 1 of the drawings, with the exception that in this form of the invention, an angle bar indicated by the reference character 40 is employed at the corners of the screen frame, the ends of the angle bars being fitted between the straight surfaces 31 and curved surfaces of the inner edges of the screen frame, bracing the corners of the screen frame against twisting.

In the modified form of the invention as shown by Figure 19, the body portion of the screen frame is indicated by the reference character 41, and as shown is formed with a right angled extension 42 extending an appreciable distance beyond the body portion 41, where it is provided with a screen receiving groove 43, so that the wire screen material may be supported in spaced relation with certain hardware, secured to a window frame.

The frame shown by Figure 20, is substantially the same as that shown by Figure 19, except that the portion 44 thereof extends inwardly to contact with the body portion 45, where it is extended at right angles as at 46.

In Figure 21, the frame is shown as including a body portion indicated at 47 and a right angled portion 48 that has a groove 49 to receive the wire mesh material. In this form of the invention the opposite side of the sheet metal material, indicated by the reference character 50, extends towards the inner edge of the body portion, where it is formed with a curved portion 51 fitted over the bead 52.

In Figure 22 a guide bar is illustrated. This guide bar indicated by the reference character 53, is constructed of a length of sheet metal material, bent in such a way as to provide lateral extensions 54 which are formed with openings to receive securing screws. A double guide bar construction is indicated by Figure 23 of the drawings and includes spaced supporting sections 55, that are designed to fit within the guide grooves of the screen frames.

It might be also stated that the sections may be secured together at their ends as by welding, soldering, or in any other suitable manner to form a continuous rectangular screen.

From the foregoing it will be seen that due to this construction, straight surfaces 31 are provided in the spline grooves, which coop-

erate with the irregular curved sides 32 of the splines positioned therein, to bite into the wire mesh material, and securely hold the same against movement.

It will further be seen that the sections of the screen frame may be readily disconnected and connected, or assembled by persons unfamiliar with mechanics.

I claim:

1. A metallic window screen comprising a frame embodying hollow side and end sections, said side and end sections having grooves formed with curved surfaces, wire mesh material fitted within the grooves, hollow metallic splines fitted within the grooves and curved to conform to the curvature of the grooves, said splines being split to provide yieldable sides adapted to be fitted within the grooves to hold wire mesh material in the grooves, the side sections having grooves in the outer surfaces thereof, and the outer longitudinal edges of the grooves being extended inwardly to grip a guide strip and retain the friction springs in said guide grooves.

2. A hollow metallic window screen comprising side and end sections, each side section having a guide groove formed along the outer edge thereof, and the outer edges of the guide groove being enlarged and yieldable, to grip a guide strip.

3. A hollow metallic window screen comprising side and end sections, each side section having a guide groove in the outer edge thereof, enlargements formed along the outer longitudinal edges of the grooves, to yieldably grip a guide strip, and said sections having aligning grooves to receive wire screen material.

4. A metallic window screen comprising a frame embodying side and end sections, the side sections having grooves formed in their outer edges, the outer longitudinal edges of the grooves being extended inwardly, friction springs, said side sections having openings, one of the respective ends of the friction springs being positioned in the openings to hold the springs against movement longitudinally of the grooves, said springs engaging the inwardly extended edges of the grooves to hold the springs within the grooves, and means for securing a wire mesh material to the frame.

5. A metallic window screen comprising a frame embodying side and end sections, the side sections having guide grooves formed in the outer edges thereof, the guide grooves including outer and inner spaced walls, corner pieces for securing the side and end sections together, each corner piece having spaced members fitted within the spaces between the outer and inner walls of the side sections, the opposite end of the corner pieces being fitted within the ends sections, and means for securing wire mesh material to the frame.

6. A metallic window screen frame comprising side and end sections, the side and end sections having spline receiving grooves, the outer and inner surfaces of the side and end sections being curved inwardly at points adjacent to the groove splines fitted in the spline receiving grooves, and said spline adapted to hold wire mesh material within the grooves.

7. A metallic window screen comprising hollow side and end sections, said side and end sections having spline receiving grooves, said side and end sections having longitudinal grooves formed in the outer surface thereof and providing a contracted portion within the hollow sections, corner pieces fitted in the adjacent ends of the side and end sections to hold the side and end sections together, and said corner pieces having reduced portions formed along their inner edges to fit within the contracted portion of the side and end sections, and splines fitted within the spline grooves to hold wire mesh material in the frame.

8. A metallic window screen frame comprising hollow side and end sections formed with longitudinal grooves in the outer surfaces thereof defining contracted portions, corner members having inwardly disposed ribs fitted in the adjacent ends of the side and end sections and means for securing wire mesh material to the frame.

9. A metallic window screen comprising a frame embodying hollow side and end sections, each of the side and end sections having a spline groove formed in one of the outer surfaces thereof, hollow splines fitted within the grooves to hold wire mesh material within the grooves, angle irons fitted within the adjacent ends of the splines, and corner splines fitted within the adjacent side and end sections.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

WILSON P. CHAMBERLAIN, JR.

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