

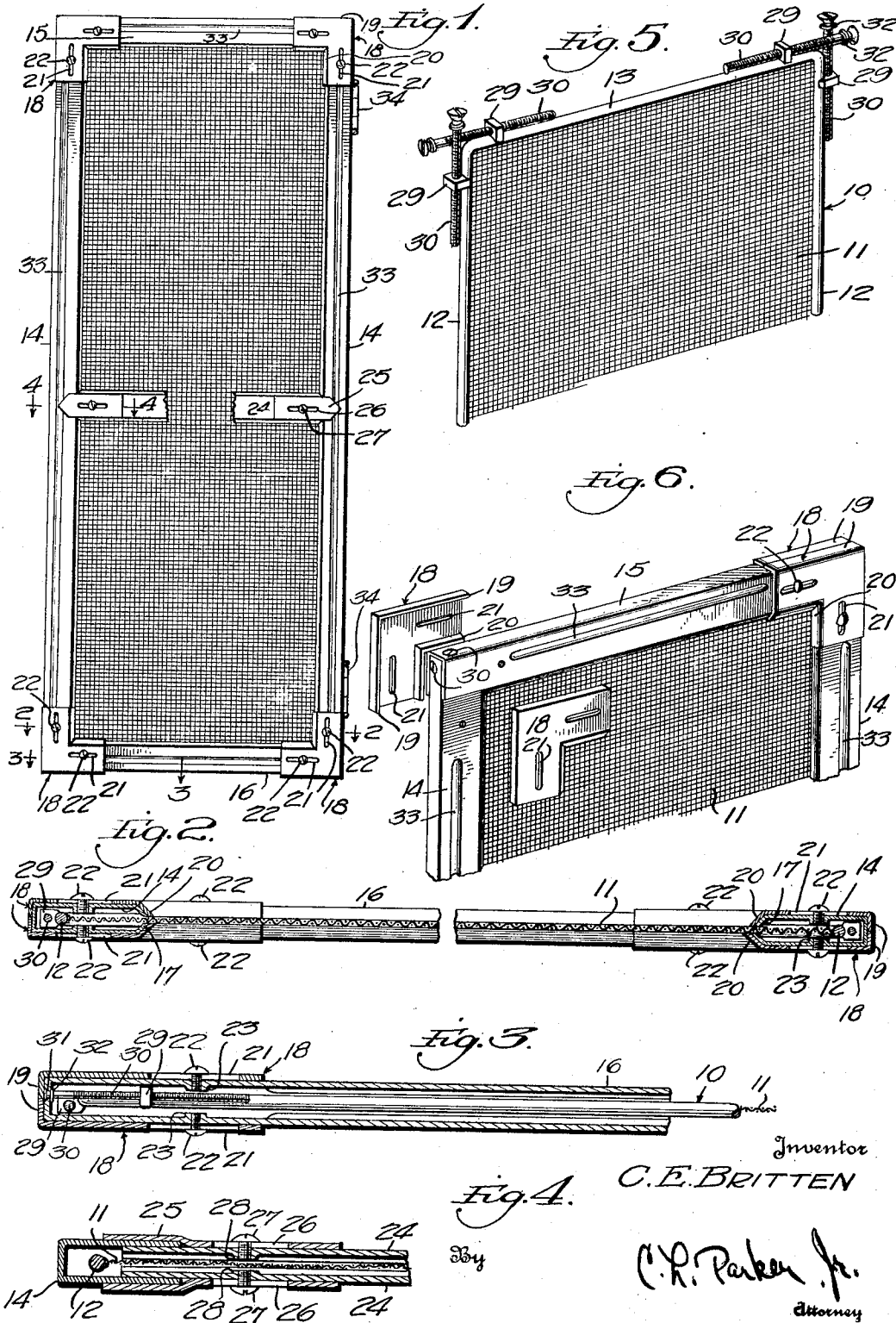
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METAL BUILDING SCREEN

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Fig. 4.

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METAL BUILDING SCREEN

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This invention relates to metal building screens, and more particularly to screen door structures.

The advantages of metal screen structures for the doors and windows of buildings are obvious, such metal structures being unaffected by moisture which causes the wooden frame structures of door and window screens to swell and warp. Moreover, a metal structure for window or door screens, when made of the proper material and protected by paint or other surface coating composition will be far more durable than the wooden structures heretofore employed. However, metallic structures for the purpose stated ordinarily are open to the disadvantage that they cannot be trimmed for accurate fitting to door or window openings as can wooden constructions.

An important object of the present invention is to provide a metallic door or window screen which is adjustable whereby it may be accurately fitted into the desired opening.

A further object is to provide novel means for adjusting the over-all size of a metallic door or window screen wherein the adjustment may be easily and accurately accomplished.

A further object is to provide a device of the character referred to wherein the adjustment of the height and width of the screen frame is accomplished without disturbing the screen fabric.

A further object is to provide a novel securing and supporting means for the screen which is operative for assisting in the adjusting action and for protecting the screen fabric against distortion while adjustments are being made.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing I have shown one embodiment of the invention. In this showing:

Figure 1 is a side elevation of a screen door, Figure 2 is a section on line 2—2 of Figure 1, parts being broken away,

Figure 3 is a similar view on line 3—3 of Figure 1,

Figure 4 is a similar view on line 4—4 of Figure 1,

Figure 5 is a fragmentary perspective view of the upper end of the screen supporting frame and associated elements, and,

Figure 6 is a similar view of the upper end of the door, parts being shown separated.

Referring to the drawing, the numeral 10 designates a holding and supporting frame for the wire fabric 11 of the door or screen. The frame 10 is preferably formed of a solid rod of circular cross section, although it will be apparent that any suitable material may be employed. The frame is bent preferably into rectangular shape to form vertical side rails 12 and upper and lower horizontal rails 13. The wire fabric is cut to a size corresponding to the opening within the frame 10, and is then placed within the opening and brazed, welded or otherwise secured to the rails of the frame.

The rails of the wire supporting frame are adapted to be concealed wholly within a metal frame structure. Referring to Figure 1, it will be noted that the metallic frame comprises generally a pair of vertical parallel side frame members 14 and upper and lower horizontal frames 15 and 16. Each of these frames is identical in cross sectional shape, and such shape is indicated in Figure 2. It will be apparent that each of the metallic frames is of a hollow channel shape with its ends turned inwardly to form angular lips 17 defining a relatively small opening therebetween. This opening is spaced for the reception of the wire cloth 11, but is materially smaller than the rails of the supporting frame 10.

Angle pieces 18 are arranged in opposite pairs at each corner of the main or outer frame. Each of these corner pieces is substantially L-shaped, as shown in Figure 6, and includes inturned lips or flanges 19 at its outer edges adapted to overlie the outer edge portions of the hollow frame. As indicated, the flanges 19 are of such width that their edges abut as shown at the right hand side of Figure 6. The inner edges of the angle pieces turn inwardly at an angle as at 20 to lie against the angular lips 17. Accordingly

it will be apparent that each pair of corner pieces 18 forms an enclosing channel for the corresponding corner of the hollow outer frame. Each angle piece is provided in each leg thereof with a slot 21 to receive a screw 22, and this screw is threaded in an opening formed by stamping a boss 23 inwardly from the adjacent hollow frame, as shown in Figures 2 and 3.

In the present instance, the invention is shown applied to a screen door, in which case it is desirable to provide frame means intermediate the height of the door. Referring to Figures 1 and 4, the numeral 24 designates a pair of channel members arranged with their open sides adjacent the wire cloth and forming intermediate frame members. These frame members extend into the side frame members 14, and for this purpose, the sides of the frame members 14 are parallel throughout their width at the point where the frame members 24 enter thereinto instead of being provided with the angular lips 17. A plate 25 has one end welded or otherwise secured against each outer face of each of the frame members 14 and projects inwardly therebeyond. Each of the plates 25 is provided with a slot 26, and a screw 27 extends through this slot and has threaded connection with an opening formed by stamping a boss 28 inwardly from the adjacent frame member 24. The screw and slot arrangement just described is similar in construction and purpose to the similar means previously described in connection with the corner pieces 18.

Each supporting frame rail 12 and 13 is provided adjacent each corner of the supporting frame with a small nut or block 29 preferably welded thereto. Screws 30 are threaded in these nuts or blocks, and it will be apparent that the vertical and horizontal screws of each corner of the frame 10 are offset from each other sufficiently to provide clearance therebetween. This is preferably accomplished by slightly offsetting the blocks 29 at each corner of the frame, as will be apparent. The screws 30 adjacent the heads thereof extend through openings 31 formed in the adjacent hollow frame members, and each screw is provided adjacent such opening with a flange 32. These flanges are placed in position after the screws are inserted and are spot welded or otherwise secured to the respective screws.

Each of the hollow frame members may be provided with any suitable form of grooving or the like for the purpose of ornamentation and reinforcement. In the present instance, each of the hollow frame members is shown as being provided with a groove 33 forming a reinforcing bead. If desired, the frame members 24 may be similarly grooved for the same purpose. When the device is embodied in a door structure, such structure may

be provided with any suitable form of hinges 34.

The operation of the device is as follows: The inner structure comprising the wire cloth and frame 10 is formed in the manner previously described by cutting the cloth to the proper size, bending the frame into the desired rectangular form, and then welding or otherwise securing the edges of the wire to the frame 10. Thus a substantially rigid supporting structure for the wire is provided, and the wire is held to its proper width and height to prevent buckling or distortion thereof. The rails 12 and 13 of the supporting frame are placed within the outer hollow frames 14, 15 and 16 by springing apart the lips 17 thereof a sufficient distance to permit the inner frame structure to pass therebetween. With the ends of the screws 30 inserted in the nuts or blocks 29, screw drivers may be applied to the heads of the screws to turn them and thus move the hollow frames inwardly with respect to the supporting frame 10. The corner plates are then applied in position and are held in such position by application of the screws 22. The intermediate frame members 24 become inserted in their desired positions with respect to the side frames 14 as the latter are moved inwardly when assembling the device. Outward distortion of the side frame members 14 intermediate their ends is prevented by tightening the screws 27.

When it is desired to accurately adjust the door to the desired size, the screws 27 are slightly loosened, whereupon the screws 22 are loosened sufficiently to permit the portions of the corner pieces 18 adjacent the screw heads to be spread apart a sufficient distance to permit the end of the screw driver to be inserted into the slots of the screws. These screws are then turned as desired to increase or diminish the width and/or height of the door, whereupon the screws 22 and 27 are tightened. These screws positively prevent relative movement between the parts, although relative movement at the corners of the door will be prevented by the screws 30, since these elements prevent any sliding movement between the hollow frame members. It will be obvious that the screws 30 function either to enlarge or decrease the size of the door. When drawing the hollow frame members inwardly, the heads of the screws contact with the frame members, while the flanges 32 contact with the inner portions of the hollow frames when the latter are moved outwardly.

From the foregoing it will be apparent that the present structure is formed wholly of metal, and any desired metal may be employed, such as steel, aluminum, etc., and since no wood parts are employed, the structure is not subject to distortion, swelling, etc., incident to exposure to the weather. The

device readily may be adjusted accurately to a desired height and width, and when so adjusted, retains its adjustment indefinitely. With parts made of the proper material and properly protected from the elements by suitable surface coating compositions, it will be apparent that the device will last indefinitely.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A device of the character described comprising a substantially rigid frame, a sheet of material secured at its edges to said frame, a hollow frame in which said rigid frame is arranged and including a plurality of separate sections, and means connected between said sections and said rigid frame for moving the former toward and away from said rigid frame.

2. A device of the character described comprising a rigid continuous frame, a sheet of material corresponding in shape to and secured at its edges to said frame, a hollow frame corresponding in shape to said rigid frame and including a plurality of separate sections each adapted to receive one side of said rigid frame, and means connected between said sections and said rigid frame for moving the former toward and away from the latter.

3. A device of the character described comprising a substantially rigid rectangular frame, a sheet of material corresponding in shape to said frame and secured at its edges thereto, a hollow frame corresponding in shape to and receiving said rigid frame, said hollow frame comprising a plurality of separate sections each receiving one side of said rigid frame, means connected between said sections and said rigid frame for moving the former toward and away from the latter, and means connected between the adjacent ends of said sections and operative for preventing movement therebetween.

4. A device of the character described comprising a substantially rigid frame, a sheet of material secured at its edges to said frame, a hollow frame in which said rigid frame is arranged and including a plurality of separate sections, means connected between said sections and said rigid frame for moving the former inwardly and outwardly with respect to said rigid frame, and means connected between the respective sections for preventing relative movement therebetween.

5. A device of the character described comprising a substantially rigid rectangular frame, a sheet of material corresponding in

shape to said frame and secured at its edges thereto, a hollow frame corresponding in shape to and receiving said rigid frame, said hollow frame comprising a plurality of separate sections each receiving one side of said rigid frame, means connected between said sections and said rigid frame for moving the former toward and away from the latter, corner pieces for the respective corners of said hollow frame, and means for securing said corner pieces to the adjacent ends of the adjacent sections in adjusted positions with respect thereto.

6. A device constructed in accordance with claim 5 wherein said last named means comprises a screw threaded in each end of each section, each corner piece being provided with slots in alinement with the adjacent sections and through which said screws extend.

7. A device of the character described comprising a substantially rigid frame, a sheet of material secured at its edges to said frame, a hollow frame in which said rigid frame is arranged and including a plurality of separate sections, and a plurality of screws operative for moving said sections inwardly and outwardly with respect to said rigid frame, said screws being rotatable in and fixed against longitudinal movement with respect to said sections and being threaded in portions of said rigid frame.

8. A device of the character described comprising a rigid continuous frame, a sheet of material corresponding in shape to and secured at its edges to said frame, a hollow frame corresponding in shape to said rigid frame and including a plurality of separate sections each adapted to receive one side of said rigid frame, nuts carried by said rigid frame, and screws threaded in said nuts, said screws being rotatable in and longitudinally fixed against movement with respect to said sections.

9. A device of the character described comprising a substantially rigid rectangular frame, a sheet of material corresponding in shape to said frame and secured at its edges thereto, a hollow frame corresponding in shape to said rigid frame and comprising a plurality of sections each receiving one side of said rigid frame, a screw carried by each section adjacent each end thereof and projecting inwardly at right angles therefrom, each screw being rotatable and longitudinally fixed with respect to its associated section, and nuts carried by said rigid frame and in which said screws are threaded.

10. A device constructed in accordance with claim 9 provided with means connected between the adjacent ends of said sections and operative for preventing movement therebetween.

11. A device constructed in accordance with claim 9 provided with corner pieces con-

nected between the adjacent ends of the adjacent sections and each provided with a slot parallel to one of the adjacent sections, and a screw extending through each slot and threaded in the adjacent section.

5 12. A device constructed in accordance with claim 9 provided with a pair of corner pieces lying against opposite faces of said hollow frame at each corner thereof and extending between the adjacent ends of the
10 adjacent sections, each corner piece being provided with a slot parallel to one of the adjacent sections, and a screw extending through each slot and threaded in the adjacent section, each pair of corner pieces being
15 provided with flanges overlying the edge portions of the adjacent sections and covering the heads of said first named screws.

20 In testimony whereof I affix my signature.

CHARLES E. BRITTEN.

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