No. 845,869. PATENTED MAR. 5, 1907.

A. M. GIFFORD.

DOOR AND WINDOW SCREEN.

APPLICATION FILED MAY 7, 1906.

Fig. 1.

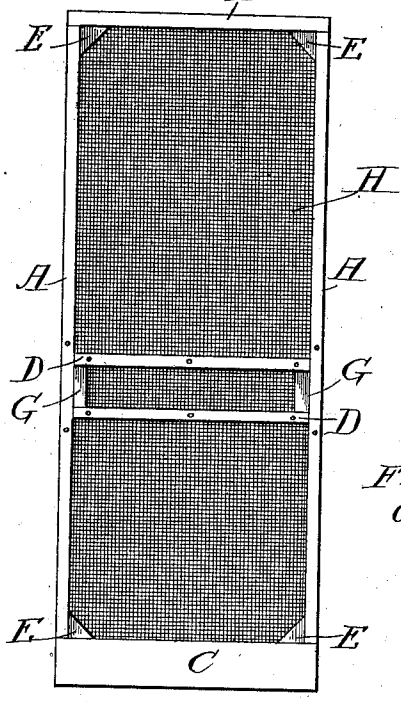


Fig. 2.

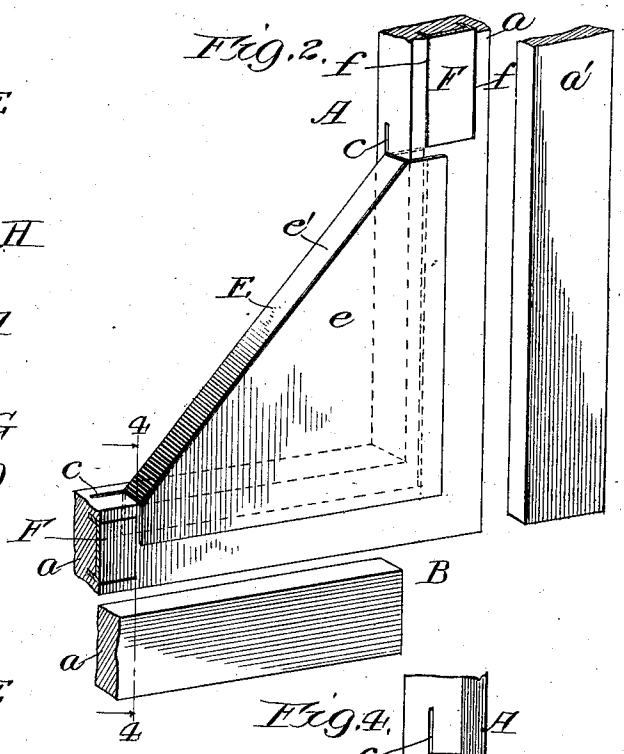


Fig. 3.

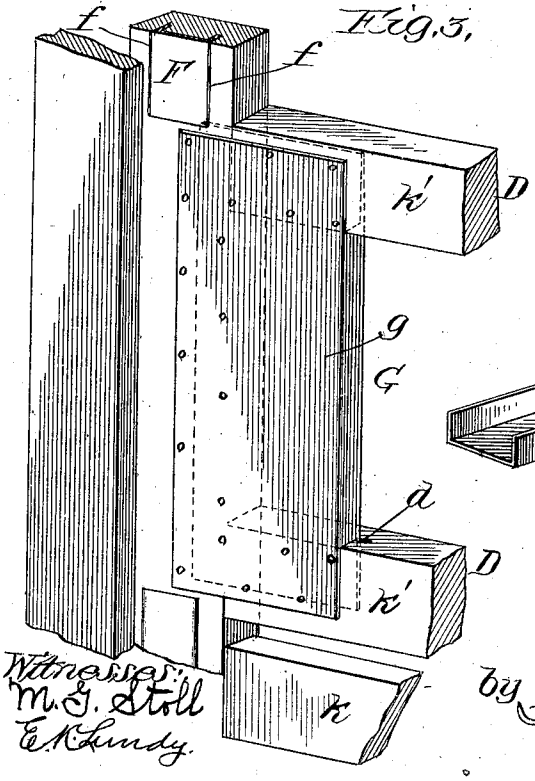


Fig. 4.

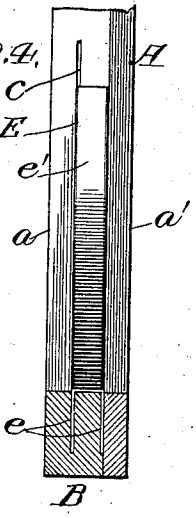
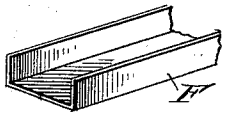


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALBERT M. GIFFORD, OF MANCELONA, MICHIGAN.

DOOR AND WINDOW SCREEN.

No. 845,869. Specification of Letters Patent. Patented March 5, 1907.

Application filed May 7, 1906. Serial No. 315,573.

To all whom it may concern:

Be it known that I, ALBERT M. GIFFORD, a citizen of the United States, and a resident of Mancelona, in the county of Antrim and State of Michigan, have invented certain new and useful Improvements in Door and Window Screens, of which the following is a clear, full, and exact description.

My invention relates to the construction of screens for doors or windows; and its object is to provide an improvement therein that will not permit them to warp or sag when subject to hard usage or changes in the atmospheric conditions and at the same time will not materially increase the cost of manufacture or add to the weight of said screens. This I accomplish by the means hereinafter fully described and as particularly pointed out in the claims.

In the drawings, Figure 1 is a front elevation of a screen-door having my improvements applied thereto. Fig. 2 is an enlarged detail view of one corner of said screen, showing the manner of applying the corner-braces. Fig. 3 is a similar view showing the manner of applying the side braces. Fig. 4 is a section taken on dotted line 4 4, Fig. 2. Fig. 5 is a detail perspective view of a portion of the channel-iron used in connection with my improved screen.

The door shown in the drawings and to which my invention is applied preferably consists of a suitable rectangular frame having vertical stiles A A, top and bottom rails B and C, and parallel center rails D D, respectively, each formed of two sections of wood *a a'*, placed flatwise, together with section *a'*, preferably thinner than section *a* and about one-third the thickness of the door-frame.

In order to prevent the warping of the frame, I provide the stiles and top and bottom rails with a suitable reinforcing-strip F, made, preferably, of channel-shaped sheet metal, which extends entirely around the frame, excepting where it is omitted and a space left where said strip would interfere with the corner and center braces. This reinforcing-strip F is disposed longitudinally and sandwiched between the sections *a* and *a'* of the sides of the door-frame, and its flanges (or parallel angular portions) enter and are confined in the parallel longitudinal grooves *f f*, made in the inner contacting surface of the rear section *a'*. In each of the inner angles of the upper and lower corners of the door-frame I secure a butterfly-brace or corner-bracket E, each of which are made of sheet metal of any description bent substantially into the form shown in the drawings and comprising two corresponding substantially triangular-shaped wings *e e*, arranged in parallel planes and having the edges thereof (not secured to the frame) connected by an integral web *e'*. In order to secure these braces E to the corners of the framework, it is necessary to first cut a deep transverse groove or kerf *c* in the contiguous connected ends of the rear sections *a* of the stiles and the upper and lower rails. When the stiles and rails are properly assembled, these kerfs *c* form a continuation of each other, and one wing of the brace E is inserted therein, while the other wing is laid flatwise between the sections and secured in this position by small nails or brads.

It is customary in the manufacture of screen-doors to connect the vertical stiles by a suitable center rail dividing said door into upper and lower panels. In the door shown I have provided the same with two horizontal center rails D D, that are, like the other portion of the frame, made of a front section *k* and rear section *k'*, of wood. At the inner angles formed by the meeting of these center rails D with the stiles I prefer to embed a supplemental brace G. This brace G is similar in construction to brace E, with the exception that its wings *g* are rectangular in form, so that the ends of one wing may be inserted into grooves *d*, cut in the stiles and the connecting center rails, while the other is placed flat between the sections of the frame in the same manner as brace E. When the screen is finished thus far, the woven-wire fabric H is placed over the same and the front sections *a* are secured to the rear sections of the frame by screws or other means that pass through the braces and into the wooden framework of said rear section.

When completed, the corner and side brackets present a neatly-finished appearance, while the door is held rigidly in shape and all liability of sagging is overcome. The invisible reinforcing-strip F, and extending intermittently around said frame, assists in preventing the latter or edgewise twisting of the wood or any warping of the same.

I desire to be understood that while I have described my invention in connection with a

door-screen it is adapted for use in connection with a window-screen, as likewise any ordinary door having wooden, iron, or canvas panels.

What I claim as new is—

1. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections, and a channel-shaped metal strip embedded between said sections and extending intermittently around said frame; of a butterfly-brace the free edges of the wings of which are embedded in an inner angle of said frame.

2. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections, and a channel-shaped metal strip embedded between said sections and extending intermittently around said frame; of a butterfly-brace comprising two flat metal wings connected along one side thereof, the free edges of said wings being embedded in the inner angle of said frame.

3. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections; and a channel-shaped metal strip embedded between said section and extending intermittently around said frame; of a butterfly-brace comprising two flat metal wings connected along one side thereof by a narrow web of metal integral therewith, the free edges of said wings being embedded in the inner angle of said frame.

4. In a screen, the combination with a substantially rectangular frame the sides of which are each composed of front and rear sections and a channel-shaped metal strip embedded between said sections and extending intermittently around said frame; of a butterfly-brace comprising two corresponding flat metal wings connected along one side thereof, the free edges of said wings being embedded in the inner angle of said frame.

5. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections and a channel-shaped metal strip embedded between said sections and extending intermittently around said frame; of a butterfly-brace comprising two corresponding triangular-shaped flat metal wings connected along one side thereof, the free edges of said wings being embedded in the inner angle of said frame.

6. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections, and a channel-shaped metal strip embedded between said sections and extending intermittently around said frame; of a butterfly-brace comprising two corresponding flat metal wings connected along one side thereof by a narrow web of metal integral therewith, the free edges of said wings being embedded in the inner angle of said frame.

7. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections, and a channel-shaped metal strip embedded between said sections and extending intermittently around said frame; of a butterfly-brace comprising two corresponding triangular-shaped flat metal wings connected along one side thereof by a narrow web integral therewith, the free edges of said wings being embedded in the inner angle of said frame.

8. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections having longitudinal grooves in the inner angles of the rear sections thereof; of butterfly-braces each comprising two flat metal wings the edge of one of said wings being inserted in said groove and the edge of the other wing secured between the front and rear sections; and a channel-shaped metal strip embedded in said frame and extending intermittently around the frame between said sections.

9. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections having longitudinal grooves in the inner angles of the rear sections thereof; of butterfly-braces each comprising two flat metal wings connected along one side thereof, the edge of one of said wings being inserted in said groove and the edge of the other wing secured between the front and rear sections; and a channel-shaped metal strip embedded in said frame and extending intermittently around the frame between said sections.

10. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections having longitudinal grooves in the inner angles of the rear sections thereof; of butterfly-braces each comprising two flat metal wings connected along one side thereof by a narrow web of metal integral therewith, the edge of one of said wings being inserted in said groove and the edge of the other wing secured between the front and rear sections; and a channel-shaped metal strip embedded in said frame and extending intermittently around the frame between said sections.

11. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections having longitudinal grooves in the inner angles of the rear sections thereof; of butterfly-braces each comprising two corresponding flat metal wings connected along one side thereof, the edge of one of said wings being inserted in said groove and the edge of the other wing secured between the front and rear sections; and a channel-shaped

metal strip embedded in said frame and extending intermittently around the frame between said sections.

12. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections having longitudinal grooves in the inner angles of the rear sections thereof; of butterfly-braces each comprising two corresponding triangular-shaped flat metal wings connected along one side thereof, the edge of one of said wings being inserted in said groove and the edge of the other wing secured between the front and rear sections; and a channel-shaped metal strip embedded in said frame and extending intermittently around the frame between said sections.

13. In a screen, the combination with a substantially rectangular frame, the sides of which are each composed of front and rear sections having longitudinal grooves in the inner angles of the rear sections thereof; of butterfly-braces each comprising two corresponding flat metal wings connected along one side thereof by a narrow web of metal integral therewith the edge of one of said wings being inserted in said groove and the edge of the other wing secured between the front and rear sections; and a channel-shaped metal strip embedded in said frame and extending intermittently around the frame between said sections.

14. In a screen, the combination with a substantially rectangular frame and transverse center rails each consisting of a front and a rear section having longitudinal grooves cut in said rear sections adjacent to the meeting-point between said frame and center rails, of a brace having the edge of one of its members inserted in said grooves and the opposite member secured between said front and rear sections, and a channel-shaped metal strip embedded in said frame and extending around the same between said sections.

15. In a screen, the combination with a substantially rectangular frame and transverse center rails each consisting of a front and a rear section having longitudinal grooves cut in said rear sections adjacent to the meeting-point between said frame and center rails, of a brace comprising two corresponding rectangular wings one of said wings being inserted partly into said grooves and the other wing secured between said front and rear sections, and a channel-shaped metal strip embedded in said frame and extending around the same between said sections.

16. In a screen, the combination with a substantially rectangular frame and transverse center rails each consisting of a front and a rear section having longitudinal grooves cut in said rear sections adjacent to the meeting-point between said frame and center rails, of a brace comprising two corresponding rectangular wings connected along one side by a narrow web of metal integral therewith, one of said wings being inserted partly into said grooves and the other wing secured between said front and rear sections, and a channel-shaped metal strip embedded in said frame and extending around the same between said sections.

In testimony whereof I have hereunto set my hand this 18th day of April, A. D. 1906.

ALBERT M. GIFFORD.

Witnesses:
C. L. BAILEY,
LOLA RODENBAUGH.