June 24, 1930. W. W. WATSON 1,765,388

SCREEN

Filed June 3, 1925

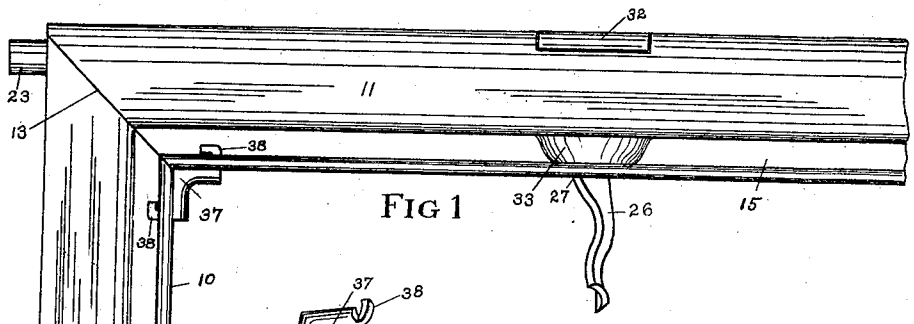


FIG 1

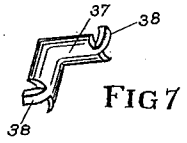


FIG 7

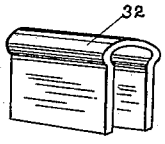


FIG 8

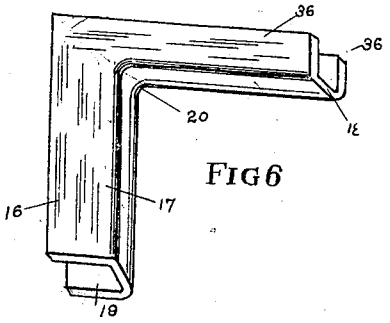


FIG 6

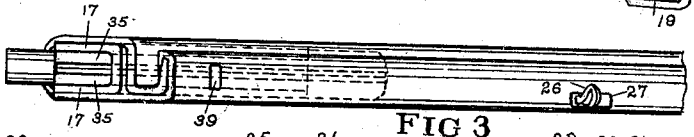


FIG 3

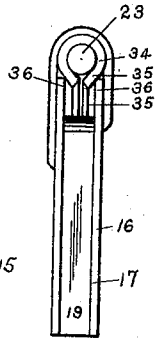


FIG 4

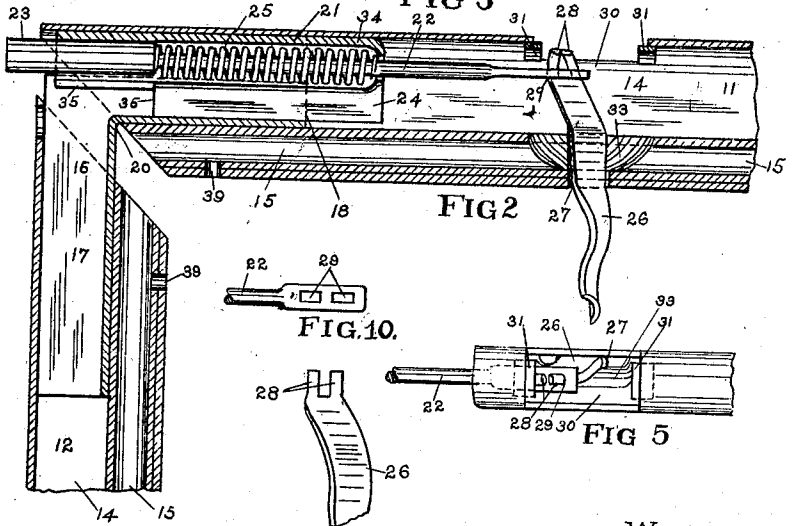


FIG 2

FIG. 10.

FIG 5

FIG. 9.

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UNITED STATES PATENT OFFICE

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SCREEN

Application filed June 3, 1925. Serial No. 34,646.

This invention relates to an improvement in a window screen, and more particularly in a screen of the metallic frame type and in the details of construction of the screen frame.

The primary object of this invention is to provide in a screen having a metallic frame made up of side, top and bottom rails meeting at the corners in a miter joint, means for supporting and rigidly uniting the abutting ends of the rails in order to resist any tendency to spread at the corners.

A further object of this invention is to provide in the screen of the character above described, a corner piece which will function both to hold the rails in their proper position and also to clamp the locking mechanism of the frame firmly in place in the cross rail.

Another object of this invention is to provide a corner piece made up of a channeled strip of metal bent at right angles, the inner line of the angle remaining continuous and unbroken.

Another object of this invention is to provide in a screen having in the cross rail a locking bar operated by a manually actuated handle, means for quickly and easily uniting the bar to the handle with a minimum of labor.

Another object of this invention is to provide in a screen of the metallic frame type a clip having tips which enter apertures in the rails to be joined, and which acts to resist any tendency of the rails to separate under stress or strain.

Other objects of this invention will appear from a consideration of the following description taken in connection with the drawings which form a part thereof, and in which

Fig. 1 is a side elevation of one corner of a screen embodying one form of this invention;

Fig. 2 is a sectional view of the screen shown in Figure 1, one face of the rails being removed in order to expose the interior and the side rail being drawn out of contact with the cross rail;

Fig. 3 is a bottom plan view of the top rail as shown in Figure 2;

Fig. 4 is an end view of the top rail as shown in Figures 2 and 3;

Fig. 5 is a plan view of a portion of the top rail, as shown in Figure 2;

Fig. 6 is a perspective view of a corner piece made in accordance with this invention;

Fig. 7 is a perspective view of a clip made in accordance with this invention in the condition in which it is before it is applied to the screen frame;

Fig. 8 is a perspective view of the cap which covers an aperture in the cross rail;

Fig. 9 is a side elevation of the handle for the locking bar before it is secured to the bar; and

Fig. 10 is a plan view of the inner end of the locking bar.

Referring to the drawings, the reference numeral 10 is employed to designate a portion of a window screen frame embodying one form of the invention including a cross rail 11 and a side rail 12, which meet in a miter joint 13. Each of the rails comprises a hollow chamber 14 and a screen receiving groove 15. A corner piece 16, shown in Figures 2 and 6, bent at right angles to provide arms 17 and 18 is forced into the chamber 14 of the rails 11 and 12 to unite them. Referring particularly to Figure 6, it will be noted that the corner piece 16 is a single plate bent at its sides to form a channel 19, and bent at right angles at 20. The inner line of the right angle 20 is continuous and unbroken, whereas, in the corner pieces previously made this portion of the angle is open. This continuous construction presents particularly great resistance to any strain that might tend to force the joints 13 to open. The arms 17 and 18 of the corner piece 16, as shown in Figure 6, differ in depth, for a purpose which will be described later.

Mounted in the chamber 14 of the cross rail 11 is a locking mechanism 21, which comprises a bar 22 terminating in a pin 23 and mounted to reciprocate in a casing 24, in which is provided a suitable spring

25 which tends to hold the locking pin 23 projecting through an aperture in the side rail 12 to engage in holes in the window frame (not shown). At the inner end of the bar 22 is secured a handle 26 which extends through a suitably formed slot 27 in the cross rail into the chamber 14. At the upper end of the handle 26 are formed separated prongs or projections 28, and in the inner end of the bar 22 are provided slots or apertures 29, through which the prongs 28 are passed when the parts are assembled.

Referring particularly to Figure 2, it will be noted that a portion of the top rail is cut away to provide an opening 30 to the chamber 14. At each end of the opening 30 is provided a support 31, on which rests the ends of a cap 32, by which the opening 30 is normally closed. Referring to Figures 2 and 5, it will be noted that the inner end of the rod 22 terminates below the opening 30, so that when the cap 32 is removed, the inner end of the rod can be reached without difficulty.

When the locking device is installed, the bar 22 is moved backward by the application of pressure against the pin 23 and the handle 26 is introduced through the slot 27, the prongs 28 being pushed through the slots 29 of the rod 22. After this is done the prongs 28 are bent toward each other, as shown particularly in Figure 2, and the parts are thus quickly locked together. The end of the handle 26 projecting below the cross rail is bent to provide a finger grip. The handle bears on the front edge of the slot 27 as a fulcrum when pressure is applied to the grip to retract the pin 23. The inner wall of the groove 15 is bent outwardly at 33 to permit the free movement of the handle.

The casing 24 of the locking device has a cylindrical portion 34 to receive the pin 23 and the spring 25, and a fin 35 projecting downwardly from the portion 34, as shown in Figures 2 and 4. When the corner piece 16 is inserted into the chamber 14 of the cross rail, the walls 36 of the shallower arm 20 extend at either side of the fin 35 and bear against the cylindrical portion 34, thus insuring the rigid location of the locking means in the chamber 14. The arm 19 is inserted into the chamber 14 of the side rail 12, and is preferably of substantially the same size as the chamber, so that there is no relative movement between the two.

In order to supplement the action of the corner piece 16 there is provided a fastening clip 37 having tips 38 which enter slots 39 in the side and cross rails adjacent the corner. The ends of the tips 38 are bent toward the joint, as shown particularly in Figure 1, and thus the clips 37 assist the corner piece to hold the rails at the joint and to resist any tendency of the joint to spread.

The corner piece 16 is shown and described as having its arms 17 and 18 of different depths, so that it can be used at a corner where a locking mechanism is provided. When the corner piece is to be used at a corner where there is no locking mechanism, the arms would be of the size of the chambers, so that there would be no relative movement between the arms and the rails.

While certain embodiments of this invention have been shown and described, applicant is not limited thereto, since it is obvious that other embodiments can be made without departing from the spirit and scope of this invention as set forth in the following claims.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:

1. In a screen having a metallic frame made up of a side and a cross rail meeting at the corner in a joint, a corner piece made up of a channeled strip of metal bent at right angle, the inner line of the angle remaining continuous and unbroken, said corner piece spanning said joint and resisting any tendency for the frame to spread at the corner.

2. In a screen having a metallic frame made up of a side and a cross rail meeting at the corner in a joint, each of said rails having a hollow longitudinal chamber, a corner piece made up of a channeled strip of metal bent at right angle, the inner line of the angle remaining continuous and unbroken, one arm of said corner piece being inserted in the chamber of one rail and the other arm being inserted in the chamber of the other rail, whereby said corner piece spans said joint and resists any tendency of the frame to spread at the corner, the edges of one arm being adapted to serve as a support for a screen locking mechanism.

3. In a screen having a metallic frame made up of a side and a cross rail meeting at the corner in a miter joint, each of said rails having a hollow longitudinal chamber, a locking mechanism in the chamber of said cross rail, and a corner piece bent at right angle inserted in the chambers of the adjoining side and cross rails spanning said miter joint, the portion of said corner piece in said cross rail bearing against and positioning said locking mechanism.

4. In a screen having a metallic frame made up of a side and a cross rail meeting at the corner in a miter joint, each of said rails having a hollow longitudinal chamber, a locking mechanism in the chamber of said cross rail, said locking device including a casing, and a corner piece bent at right angles inserted in the chambers of

the adjoining side and cross rails spanning said miter joint, the portion of said corner piece in said cross rail bearing against said casing, and positioning said locking mechanism.

5. In a screen having a metallic frame made up of a side and a cross rail meeting at the corner in a miter joint, said cross rail having a hollow longitudinal chamber, and an opening through the top of said rail, a locking mechanism in said chamber including a reciprocatory bar the inner end of which is below said opening and has a plurality of apertures and a handle in said cross rail terminating in prongs which are passed through said apertures when said parts are assembled and bent over, thus uniting said handle to said bar.

6. In a screen having a metallic frame made up of a side and a cross rail meeting at the corner, each of said rails having a hollow longitudinal chamber and a slot adjacent said corner, a corner piece made up of a channeled strip of metal bent at right angle, the inner line of the angle remaining continuous and unbroken, one arm of said corner piece being inserted in the chamber of one rail and the other arm being inserted in the chamber of the other rail, whereby said corner piece spans said joint and resists any tendency of the frame to spread at the corners, and a right-angled clip secured to said frame at the inner face of said corner by means of integral tips which enter said slots and are bent down toward the corner, thus supplementing the action of said corner piece.

In testimony whereof I have affixed my signature.

WILLIAM W. WATSON.