No. 836,419. PATENTED NOV. 20, 1906.

H. W. & W. W. WATSON.

METAL SCREEN.

APPLICATION FILED DEC. 15, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

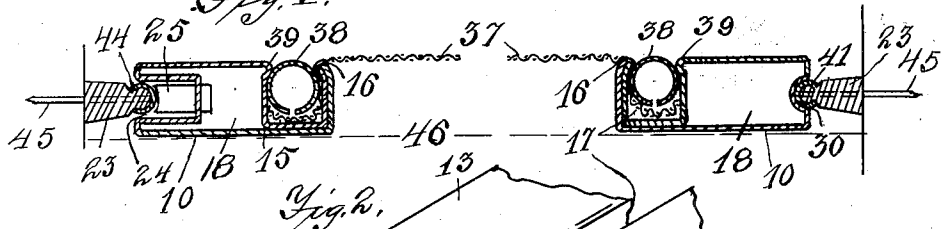


Fig. 2.

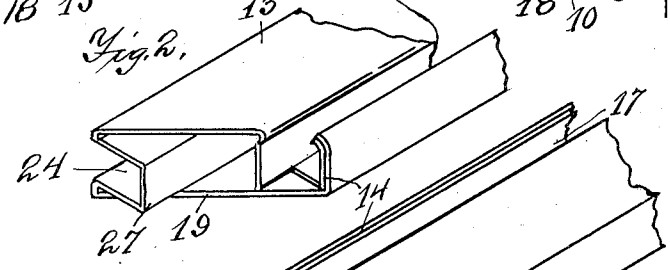


Fig. 3.

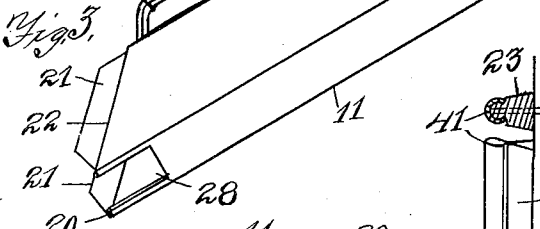


Fig. 4.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

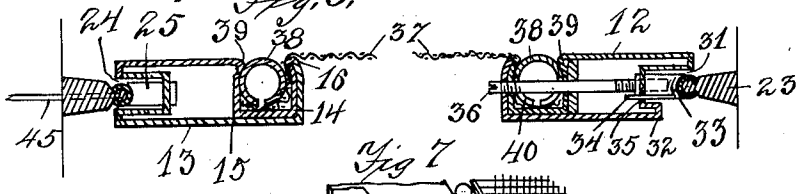


Fig. 7

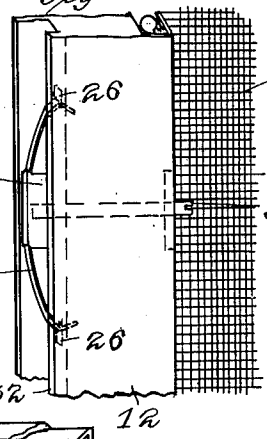


Fig. 10.

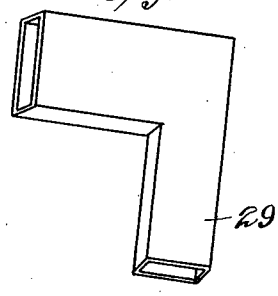


Fig. 6.

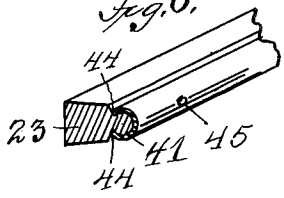


Fig. 9.

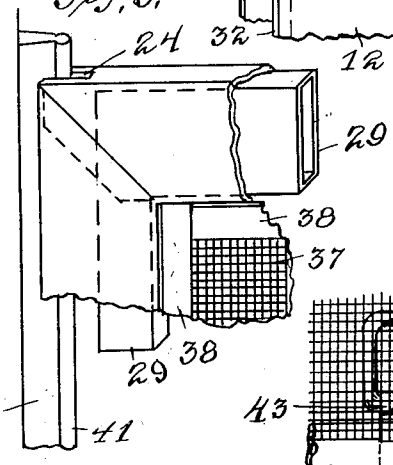


Fig. 8.

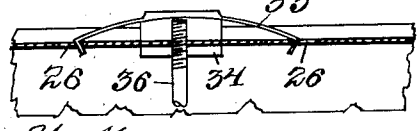


Fig 11

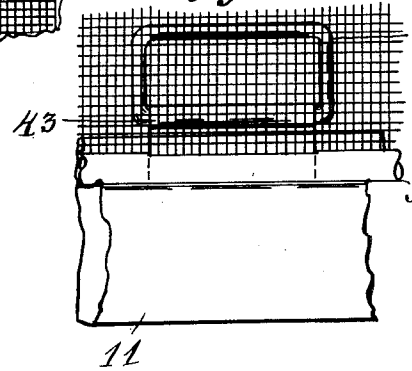
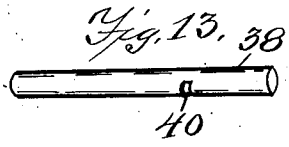


Fig. 13.



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UNITED STATES PATENT OFFICE.

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METAL SCREEN.

No. 836,419. Specification of Letters Patent. Patented Nov. 20, 1906.

Application filed December 15, 1905. Serial No. 291,825.

To all whom it may concern:

Be it known that we, HENRY W. WATSON and WILLIAM W. WATSON, citizens of the United States, and residents of Jamestown, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Metal Screens, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The invention relates to metallic-screen construction for windows and like openings, and is an improvement on the construction as shown in our former Letters Patent, No. 802,090, and in our application for Letters Patent filed July 27, 1905, and bearing Serial No. 271,416.

Our invention consists in the construction and combination of the parts which we hereinafter describe, and specifically point out in the claims.

In the drawings, Figure 1 is a sectional view at line X X in Fig. 4. Fig. 2 is a perspective view of an end of one of the tubular-frame sides, and Fig. 3 is a perspective view of the end of an adjoining tubular-frame side which fits into the end shown in Fig. 2 to form a corner. Fig. 4 is a full-sized plan view of the screen and guides on the window-casing with the central portions broken away vertically and horizontally. Fig. 5 is a sectional view similar to that shown in Fig. 1 of a modification of the screen. Fig. 6 is a perspective view of our improved guide-strip for the screen on the window-casing. Fig. 7 is a side elevation of a portion of the screen and frame, showing an adjustable shoe bearing on the guide-strip; and Fig. 8 is an elevation of the opposite side of said shoe, the tube being shown in section. Fig. 9 is a perspective view of the tubular corner-piece inserted within the corner of the screen-frame, and Fig. 10 shows a similar view of said corner-piece. Fig. 11 is an elevation of an adjustable lift and shows the lift attached to a section of the frame side; and Fig. 12 is a sectional view of the frame side, showing an end elevation of the lift and the strip for adjustably attaching said lift in the wire-retaining groove. Fig. 13 is a perspective view of the retaining-tube for the screen-wire, showing the slot therein for the adjusting-screw of the spring-shoe.

Similar numerals refer to the corresponding parts in the several views.

The numeral 10 indicates the tubular sheet-metal frame, which consists of the horizontal top and bottom pieces 11 and the vertical lateral pieces 12 and 13. These tubular-frame sides are each formed from single strips of sheet metal by means of suitable dies and presses. The lengthwise edges 14 of the strip are united and bent in a channel or groove 17 and then attached, by means of solder or brazing, throughout their contacting surfaces from the point of first contact at 15 to the outer edge 16 of the flange which forms one side of the channel 17. This forms the frame side in a solid tube having a closed opening 18.

Each of the corners is formed in a miter-joint, as follows: One of the ends 19 is cut on the mitral line, excepting the outer channel part 24, which extends to the opposite end, as at 27. The opposing end 20 is formed with the flanges 21, which extend into end 19 each side of projection 27, giving wide space for soldering the same, an offset 22 being formed on the mitral line of flanges 21 for the mitral edges of end 19 to set against, and thus form a smooth stiff joint.

Each tubular corner is stiffened and made strong by means of tubular corner-pieces 29, which are inserted within the tubular corner, as shown in Fig. 9 and in dotted outline in Fig. 4. Corner-pieces 29 are made a solid tube and fit tightly within the tubular opening 18 at each corner of the frame, the size of the different sides of the tubular corner-piece 29 being made to fit the opening in the frame side. Corner-piece 29 may be soldered or fastened within the tubular-frame corner, though it forms a strong stiffening-brace without such fastening.

The lateral frame sides 12 and 13 are formed with lengthwise channels bent in the sheet metal to receive the guide-strips 23 on the window-casing. Channel or groove 24 in frame side 13 is made of sufficient depth to receive the elliptical springs 25, which springs are preferably made as shown in our former Letters Patent, No. 802,090, spaced slots 26 being provided in the bottom of channel 24 to be engaged by the angular ends of springs 25. Channel 24 extends beyond the mitered end 19 and forms a strong brace to stiffen the

corner of the tubular frame, the end 27 extending against the inside of opposite end 20. An opening 28 is provided in end 20, corresponding to channel 24, so that channel 24 extends through the entire side of the frame. The lateral frame-piece 12 is usually formed with a shallow groove 30 to receive guide 23. The groove 30 is bent in the frame side and has its ends formed similar to groove 24. It is often desirable, however, to have a greater range of adjustability than elliptical springs 25 will allow. This is provided for in the following manner: In the modification shown in Fig. 5, instead of the shallow groove 30, a deeper groove 31 is formed with a low side 32 to admit the guide-strip 23. An elliptical spring-shoe 33 is placed in channel 31 by means of spaced slots 26 in the bottom of the channel, the same as for spring 25. Spring-shoe 33 and elliptical spring 25 have their outer bearing-surfaces formed in a hollow groove to receive the round face of guide-strips 23. Spring-shoe 33 has a projection 34, which extends through a slot 35 in the bottom of groove 31. Projection 34 keeps shoe 33 from tipping sidewise. Shoe 33 is also given stability and a closer adjustment by means of screw 36, which extends through frame side 12 and against the inner side of shoe 33. It is apparent that any desired amount of leeway can be given to shoe 33 by means of screw 36. It is also obvious that with the deep groove 24 in frame-piece 13 it would be impossible to admit to a correspondingly deep groove in frame-piece 12 on the opposite side of the frame without the doing away with the side of the groove, as at 32.

The screen-wire 37 is attached to the tubular frame in groove 17 by means of the spring-tube 38, as in our former construction, the mouth of channel 17 being slidably contracted by means of the inward projection of edge 16 and the lengthwise outward projection of edge 39. A crosswise cut 40, as shown in Figs. 5 and 13, is made in tube 38 to accommodate adjusting-screw 36 for shoe 33.

Guide-strips 23 on the window-casing are made of wood. The sheet-metal cap 41 extends onto the strip a sufficient distance to serve the purpose of contact with the shoe or spring of the frame side, but leaves the wooden base free for fitting to the window-casing. Window-casings are often out of true, and our improved guide-strip allows of the wood being cut away to exactly adjust the space between the strips, so that the screen will run true. Thus the strip may be much narrower at one end than the other, as shown in the strips at each side of Fig. 4, wherein the lower end, as shown in section, is much narrower than the upper end. Sheet-metal cap 41 is clasped onto the bead-like edge of the wood base, the edges pressing into the wood, as at 44. This clasp is sufficient to hold the cap 41 on the strip. Cap 41 serves, also, another important purpose in preventing the splitting of the strip. It is obvious that the cap 41, clasping the strip at each side at 44, will prevent the splitting of the wood by the driving of the nails 35. Cap 41 also forms a strong hold for the head of the nails. This strip 23 admits of close fitting to the window-sash, since the screen-frame 10 can be placed against the sash, as shown at the dotted line 46 in Fig. 1. Our improved guide-strip is made the subject of a separate application, Serial No. 291,826, of even date with this application.

It is often desirable to attach a lift at different portions of the screen-frame. By our improved construction we are enabled to so adjustably place the lifts in the following manner: A suitable handle 42 for the lift is provided with a strip of sheet metal 43, pivotally attached at one side and extending out therefrom a sufficient distance to be engaged underneath the screen-wire 37 and locking-strip 38 in channel 17. The said locking-strip and screen-wire hold the lift firmly in place, and it is obvious that the lift can be placed at any point around the inner side of the screen-frame at which it is desired.

We claim as new—

1. In a window-screen, a frame having a channel along its inner edge for the screen-wire, a retaining-strip for said wire in said channel, a lift consisting of a wire loop having a metal strip pivotally attached thereto, said strip to be held in said channel by said screen-wire and retaining-strip.

2. In a window-screen, a sheet-metal frame composed of side and end pieces formed in a tube, a lateral edge of the frame formed in a channel having spaced slots therein, bowed spring-shoes having their end portions bent substantially at right angles and engaging through said slots to allow of a sliding in and out movement, and adjusting-screws in the tubular frame side for said spring-shoes.

3. In a window-screen, a frame composed of tubular sheet-metal side and end pieces having channels in the vertical lateral edges and spaced slots in said channels, bowed springs in one of said channels having their end portions bent substantially at right angles and engaging through said slots to allow of a sliding in and out movement, bowed spring-shoes similarly engaging through the slots in the opposite channel and having a side projection through a lengthwise slot in the channel, and adjusting-screws through the tubular frame side for said spring-shoes.

4. In a window-screen, a frame, the side and end pieces of said frame consisting of strips of sheet metal formed in a tube, the channel or recess formed in said strips along the inner side of said tube, the lateral tubular pieces of the frame also formed in a channel

along their outer edges, screen-wire, and retaining-strips to fit said inner recess and hold the wire.

5. In a window-screen, a frame, the side and end pieces of said frame consisting of sheet metal formed in a tube, a continuous channel along the inner edge of said tube and also channels formed in the outer edges of the lateral pieces of the frame, said outer channel parts extending at each corner of the frame within the opposing end, said opposing ends cut away to form channels the full length of the screen, screen-wire, and retaining-strips to fit said inner channel and hold said wire.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HENRY W. WATSON.
WILLIAM W. WATSON.

Witnesses:
S. A. BALDWIN,
A. W. KETTLE.