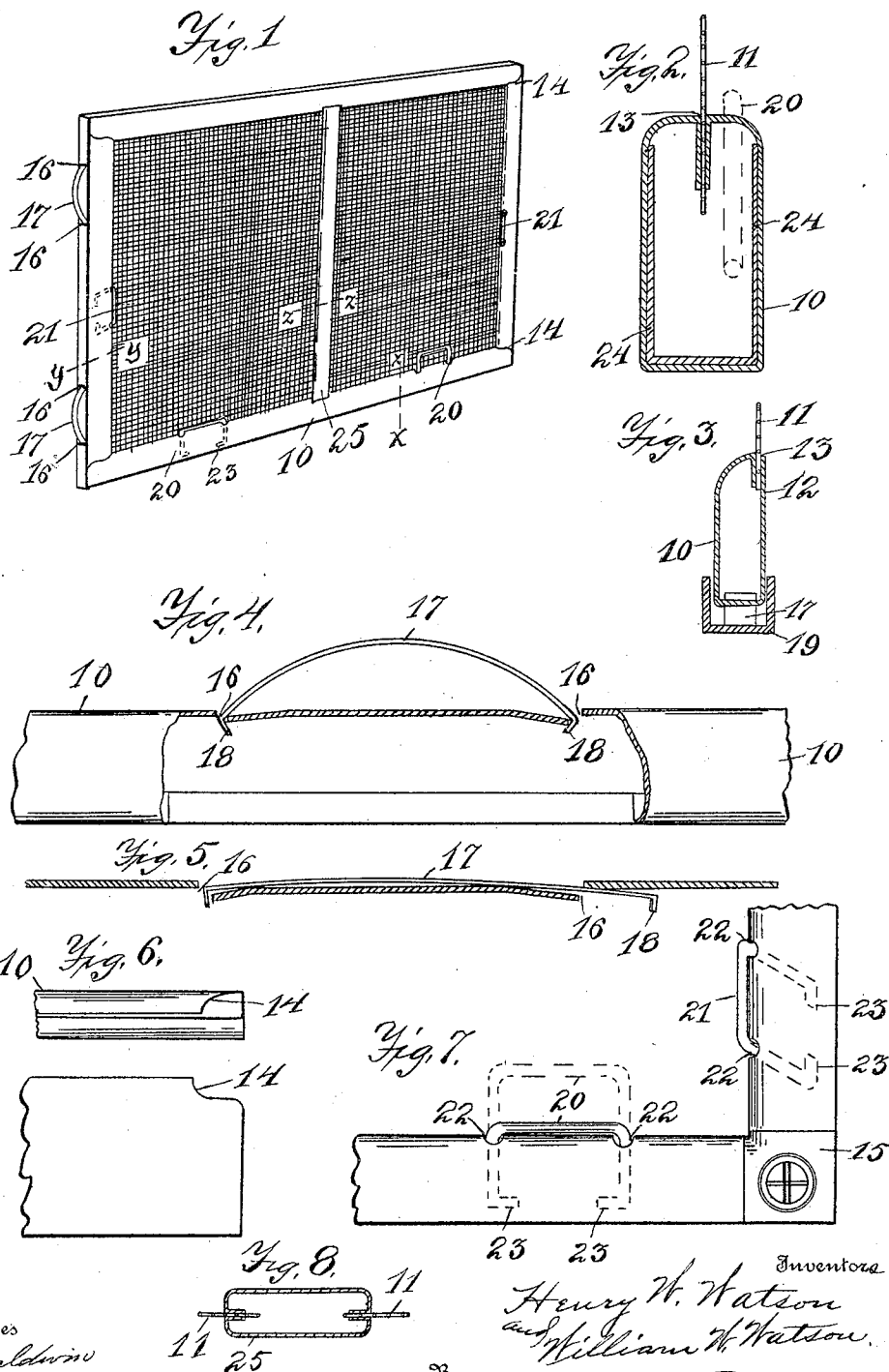


H. W. & W. W. WATSON.
METAL WINDOW SCREEN.
APPLICATION FILED SEPT. 2, 1904.

2 SHEETS--SHEET 1.



Witnesses
F. O. Baldwin
R. E. Strong

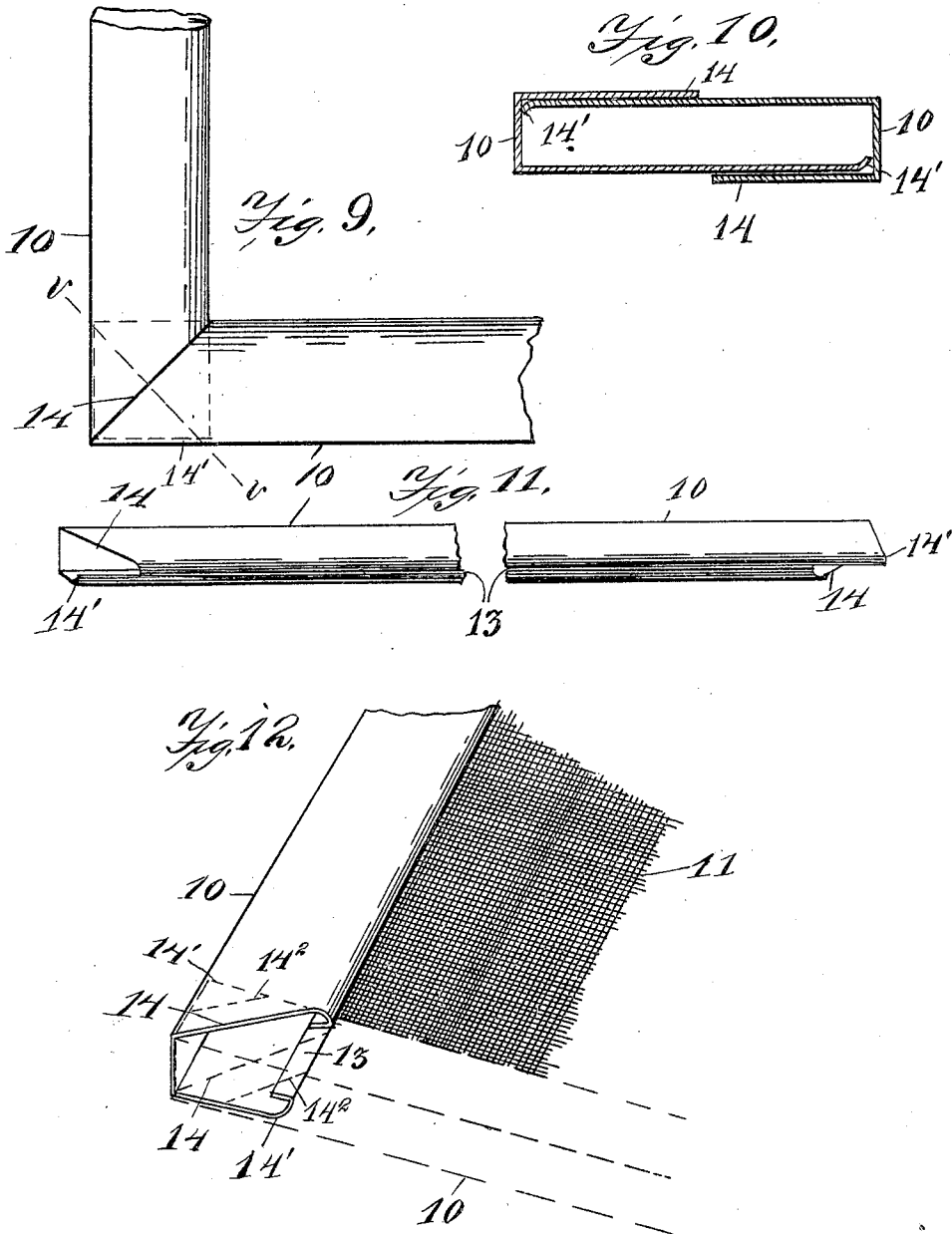
Inventors
Henry W. Watson
and William W. Watson.
By
S. Arthur Baldwin.
Attorney

No. 802,090.

PATENTED OCT. 17, 1905.

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Witnesses

F. O. Baldwin
A. W. Kittle

Inventors

Henry W. Watson
and William W. Watson
By S. Arthur Baldwin,
Attorney

UNITED STATES PATENT OFFICE.

HENRY W. WATSON AND WILLIAM W. WATSON, OF JAMESTOWN, NEW YORK.

METAL WINDOW-SCREEN.

No. 802,090.

Specification of Letters Patent.

Patented Oct. 17, 1905.

Application filed September 2, 1904. Serial No. 223,115.

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 Window-Screens, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

Our invention relates to metallic window or door screens, and has for its objects to simplify and improve the construction by providing a simple manner of forming a tubular rim and attaching the screen-wire, also of forming the lifts and holding-springs, as will be fully hereinafter described.

In the drawings, Figure 1 is a perspective view of a window-screen with our improved construction. Fig. 2 is a sectional view at line X X in Fig. 1. Fig. 3 is a sectional view of another form of metal rim and shows the holding-spring as at line Y Y in Fig. 1 and the sheet-metal channel-piece therefor. Fig. 4 is a side elevation of the holding-spring and rim, part of the rim being broken away. Fig. 5 is a lengthwise sectional view of the rim, showing the holding-spring pressed down for releasing one end of the same. Fig. 6 is a detail view of the end of one of the tubular sides folded and flat and showing the cut at the corner to accommodate the side. Fig. 7 is a detail view of a corner of the metal rim, showing the different forms of lifts and their means of attachment to the rim. Fig. 8 is a sectional view of the cross-bar at line Z Z in Fig. 1. Fig. 9 is a side elevation of the corner made by the tubular side and end. Fig. 10 is a sectional view at line V V in Fig. 9. Fig. 11 is a perspective view of one of the tubular side or end pieces, the middle portion being broken away and showing the corner cuts on opposite sides as preferably made. Fig. 12 is a perspective view of a corner of the screen, one of the tubular frame-pieces being shown in dotted outline.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates our tubular sheet-metal rim, which is bent from the strip by means of suitable presses and dies into the form shown in Figs. 2 and 3, according as it is desired to have the screen-wire 11 contiguous to or at a distance from the win-

dow-sash, the flat side 12, as shown in Fig. 3, placing the wire 11 close to any desired object.

The two sides of the rim or frame are bent upward and then inwardly, so that adjacent surfaces are supplied which can be soldered to the screen-wire 11, as at 13 in Figs. 2 and 3. The corners of the tubular frame are formed by each of the end and side pieces forming the corner having a cut 14, usually diagonal, in one of said adjacent inner edges 13, which cut corresponds to and accommodates the uncut edge 13 of the opposing end 14'. The cuts 14 are made on opposite sides of the two ends thus united, and it is apparent that the uncut or straight side 14' can be placed within the opening made by the cut 14 and extended down against the inner side of the tube, as shown at 14' in Figs. 9 and 12. The lap formed by the cut end 14 overlapping the uncut end 14' gives large holding-surfaces between which the solder can be flowed in uniting the ends. It is apparent that the end 14' extending down against the inner surface of the opposing tubular end will brace against said inner surface on both sides of the corner and will thus form an extremely firm interlocking corner with large soldering-surfaces on each side. The intumed edge 13 of the uncut corner with the curve of the side extending up to the same forms a much stronger bracing means against the inner side of the opposing end than it would if left flat. The full form, therefore, of the uncut end 14', which braces against the inner side of the opposing end, is preferred for nearly all kinds of screenwork, and particularly for heavy or large screens. It is apparent, however, that a smaller lapping-surface might be used in small screens for light work and not depart from my invention. Thus the corners of the uncut ends 14' might be cut away, as at the lines 14², as shown in Fig. 12, and still leave large soldering-surfaces.

We usually prefer to make the cuts 14 on opposite sides of each side or end piece 10, as shown in Fig. 11, though this is not absolutely essential to our invention. We prefer, however, to so form them, since the same pattern will serve for all the side and end pieces, accommodation being made for the length desired. It is obvious that when so made with the cuts 14 on opposite sides that by turning said pieces so that these cuts

shall come on opposite sides at each corner they will interlock, as described and shown. The corners can be soldered, as stated, or otherwise firmly attached. It is found, however, that this bracing construction by the uncut ends forms a very firm corner needing but slight attaching means.

Slots 16 are provided on the outer edges of the hollow frame 10 at a spaced distance to receive the ends 18 of the holding-spring 17 and hold said spring with tension. It is obvious that such tension will result from spacing the slots 16 at a greater distance apart than the normal length of the bowed spring. Said slots 16 are made with the outer edge higher than the inner edge, so that the spring 17 can be depressed, as shown in Fig. 5, and one end of the spring can then be easily removed by prying out the end 18 from the slot. Said ends 18 are turned at similar inward angles, which are substantially right angles, so that they are held on the inner edges adjacent to said slots by the tension of the spring, as above stated. It is obvious that the springs cannot be removed when in their normal position under tension without depression and that being of uniform width they are free to pass in either direction with a synchronous sliding in and out movement when depressed. This arrangement makes their removal easy, as above described, and is of great utility in inserting new springs or in removal for packing for shipment. The removal of the springs for shipment prevents the breakage of the same, and the screen-frames occupy less space. The outward bend of spring 17 slides in a channel-piece 19, which is preferably formed of sheet metal and is attached to the sides of the window-frame.

Much trouble has been experienced in the use of lifts or handles for raising the screens on account of their getting in the way of the window-sash, as it passes up and down in such close proximity to the screen. We therefore make our lift 20 for the bottom of the sash and 21 for the side of the sash so as to disappear or drop back into openings 22 in the hollow screen-frame when not in use, the inner ends 23 of the lifts being turned, so as to lock against the withdrawal of the lift from the tubular frame. The lifts 21 in the sides of the frame are made at a downward angle, so that they slide back into the tubular screen-frame almost of their own weight. It is apparent that when the lifts are pressed in close to the frame it would be impossible for the sash to touch them, and yet they are ready for instant use in handling the screen.

Our screen-frame is made of brass or other durable sheet metals and may be given a coating of enamel or other suitable dressing, and on account of the great durability of the all-metal frame we prefer to use bronze screen-

wire, which does not rust. When it is desired to strengthen or reinforce the tube 10, a channel-piece 24, which corresponds to the inside of tube 10, is slipped within each of the sides of the frame 10. It is apparent that great strength and stiffness may thus be given to the frame 10.

When the screen is so large that a cross-support 25 is made necessary, we usually make the same of two pieces, the edges being bent in and soldered to the edges of the screen-wire 11, as shown in Fig. 8, and the abutting ends of the cross-piece 25 being firmly attached, by means of solder, to the sides of the frame.

We claim as new—

1. A window-screen consisting of tubular side and end pieces, the end of each side and end piece being partially cut away, the uncut-away portion of one side piece underlapping the end piece adjacent to its cut-away portion to form a corner, and means for securing the side and end pieces together.

2. A window-screen consisting of tubular side and end pieces having parallel adjacent inner edges, screen-wire secured between said adjacent edges, each end of said tubular side pieces having one of the adjacent inner edges cut away, the uncut-away portion of one end underlapping the other end piece adjacent to its cut-away portion to form a corner, and suitable means for fastening said interlocking ends.

3. A window-screen consisting of sheet-metal strips bent into tubular form with parallel adjacent edges, the opposite corners of the two tubular sides forming the frame-corners provided with openings corresponding to the shape of the tubular frame, suitable means for fastening said frame-corners, screen-wire secured with solder between said adjacent edges, and cross-bars formed of two parallel sheet-metal strips having on opposite sides inwardly-bent adjacent edges soldered to the screen-wire and frame sides.

4. A window-screen, consisting of a suitable hollow sheet-metal frame, screen-wire fastened in said frame, openings in said hollow frame adjacent to said screen-wire, disappearing lifts comprising a U-shaped member having its arms slidably passed inward through said openings, and the inner ends of said arms turned at a locking-angle as to the tube side, substantially as and for the purpose specified.

5. A window-screen, consisting of a suitable hollow sheet-metal frame, screen-wire fastened in said frame, openings in the vertical sides of said frame adjacent to said screen-wire, disappearing lifts comprising a U-shaped member having its arms slidably passed inward through said openings at a downward inclination to drop back into said vertically-placed openings, and the inner ends of said arms turned at a locking-angle

to the tube's inner side, substantially as and for the purpose specified.

6. In combination with a hollow metallic frame having spaced slots therein, bowed springs of uniform width throughout having their ends bent at substantially right angles and engaging said frame adjacent said slots and sliding in and out of the same, to prevent disengagement of said springs when in a normal bowed state and to allow of removal thereof when the springs are in a flat state.

7. A window-screen consisting of tubular sides 10 having the parallel adjacent edges 13, opposite corners of the two tubular sides forming the frame-corners having the cuts 14 corresponding to the shape of the tube side,

suitable means for fastening said frame-corners, screen-wire 11 soldered to said adjacent edges, disappearing lifts 20 and 21 in said frame, and holding-springs 17 having the oppositely-bent ends 18 to engage suitable slots 16 in said frame, substantially as and for the purpose specified.

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. ARTHUR BALDWIN,
A. L. FURLow.