

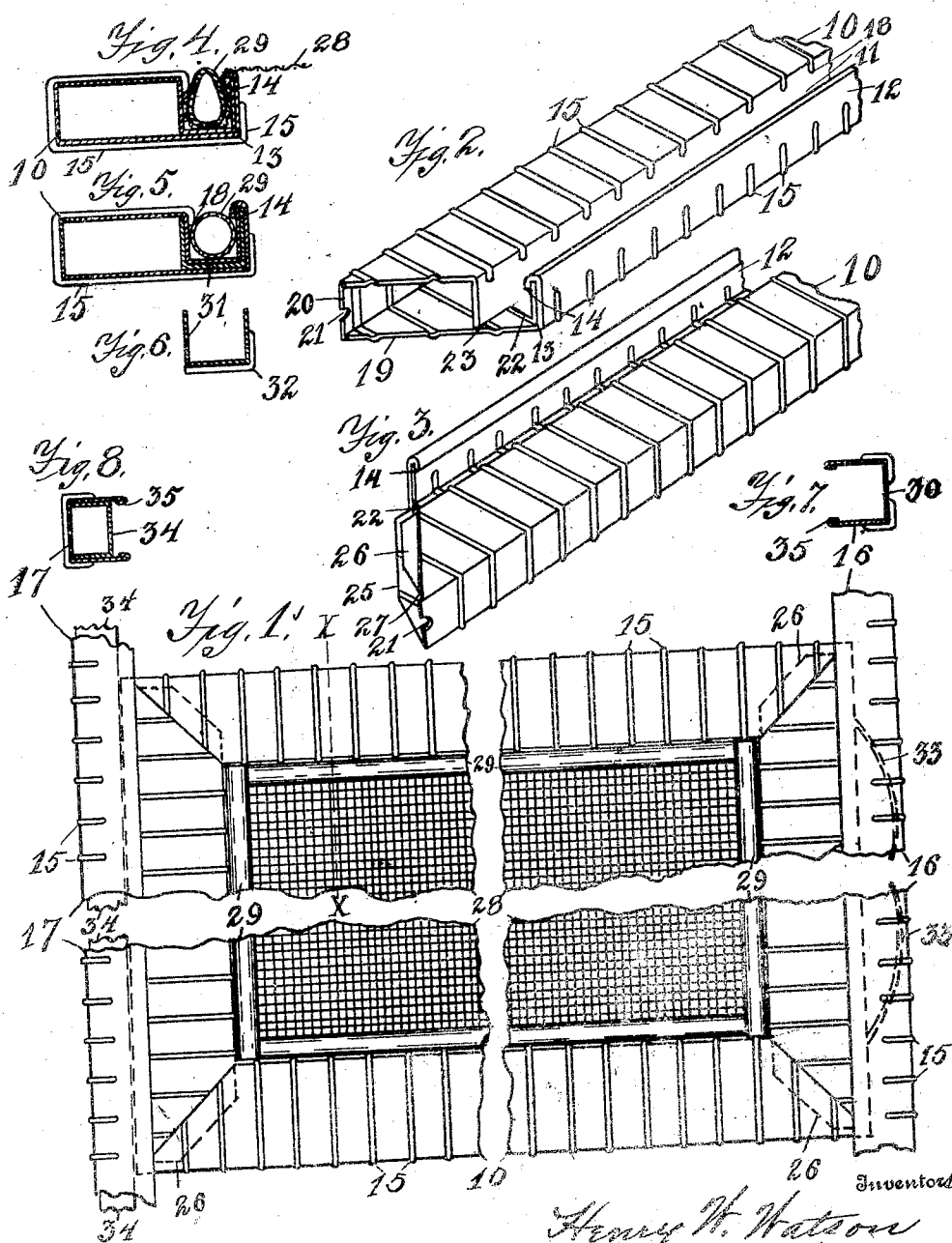
No. 836,475

PATENTED NOV. 20, 1906.

H. W. & W. W. WATSON.

METAL SCREEN.

APPLICATION FILED OCT. 30, 1905.



Witnesses

A. W. Kettle
J. A. Ellsworth

Henry W. Watson
William W. Watson
S. Arthur Ballou.
Attorney

UNITED STATES PATENT OFFICE.

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

METAL SCREEN.

No. 836,475.

Specification of Letters Patent.

Patented Nov. 20, 1906.

Application filed October 30, 1905. Serial No. 284,948.

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, 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 upon the tubular construction shown in our application for Letters Patent filed July 27, 1905, bearing Serial No. 271,416.

The object of this improvement is to provide means for stiffening and strengthening the tubular sheet-metal-frame sides and the channel-pieces for the frame to slide in, so that exceedingly light and thin sheet metal can be used without impairing the rigidity of the frame, thus making an exceedingly light and strong screen. The extra weight of the all-metal construction is almost prohibitive against the use of metal and any means which combines strength and lightness is a great improvement.

In the drawings, Figure 1 is a plan view of the full-size screen and channel-pieces for the window-casing with the central portions broken away vertically and horizontally. Fig. 2 is a perspective view of one of the ends of the tubular frame sides, and Fig. 3 is a perspective view of the opposite end which fits into the end shown in Fig. 2 to form a frame-corner. Fig. 4 is a sectional view of the tubular frame sides at line X X in Fig. 1. Fig. 5 is a sectional view of the tubular frame sides with the reinforcing-strip, and Fig. 6 is an end view of the detached reinforcing-strip. Fig. 7 is an end view of the channel-piece in which the spring side of the screen slides on the window-casing; and Fig. 8 is an end view of a filled channel-piece for the opposite side of the screen, so that said channel-pieces shall present an equal width and even appearance on each side of the window.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates the tubular metal frame side or end, which is cut and bent from the flat sheet-metal strip by means of suitable dies and presses. The tube of frame side 10 is preferably made in the rectangular form and has along its inner edge a lengthwise recess or channel 11, formed from the strip by extending both the edges of the sheet metal when brought into contact at the lower corner of the tube out in the angular flange 12, the two contacting edges being pressed together and bent at right angles at 13 to form channel 11, and the inner edge left short and the outer edge extended inwardly over said inner edge to form a locking projection 14 for a purpose hereinafter set forth.

In order to form a tight tube 10 and to give great rigidity to the frame, the two contacting edges which form the angular flange 12 are preferably united by solder or brazing, so that they are as one, a solid tube as distinguished from a split tube. This absolutely prevents the slipping of one edge on the other from torsional strain on the screen-frame and gives great rigidity to the construction.

It is found highly desirable to make the frame sides 10 of exceedingly light or thin sheet metal. This is particularly advantageous in making screen-frames of large size, since such screens are exceedingly heavy and impracticable where heavy-metal stiffening-rods have to be used. In order to use a light weight of sheet metal in the tubular sides 10 and flange 12, it must be stiffened. Accordingly spaced beads or ribs 15 are pressed into the thin sheet metal, thereby giving great added stiffness to the metal, particularly in the angular corners, both in the tubular sides 10 and in the channel-strips 16 and 17. The beads 15 in the frame sides 10 extend from a point in the rear wall of the channel 11, which ending 18 of the bead has an added utility, as hereinafter set forth, and extends around the tubular portion and across the bottom of the flange 12 and passes up the side a sufficient distance to give the necessary rigidity to the angular-flange corner 13. It is apparent that the ribs 15 would act as a brace, adding great stiffness to the flange and allowing of the use of a much

lighter weight of sheet metal than would otherwise be possible. The two edges of the strip which form the angular flange 12 are both indented in these spaced beads in addition to the solder, and thereby greatly aid in giving rigidity to the frame sides and in preventing the slipping of the said parts on one another from torsional strain of the frame.

The beads 15 are small in the frame sides 10 and slip easily back and forth within the channel-strips 16 and 17. The beads extend clear across the bottom of the channel-strip 17, as shown in Fig. 8, and part way up the side, but only as a brace around the corner of strip 16, as shown in Fig. 7, in order that a smooth central portion 30 may be left for spring 33 to slide on.

The opposing ends of the tubular frame sides are made in the following manner: End 19 is cut at the regular angle of a forty-five-degree miter with the exception of the outer edge 20; which is allowed to project slightly to cover the opposing end 24. One half of the drip-hole 21 is cut in end 20 and the other half in the opposing end 24. The inner plate forming the bottom of the channel 11 is cut square across, as at 22, and a slotted opening 23 is thereby left to receive the projecting sheet-metal flange 25 of the opposite end. The opposing end 24 is formed with projecting flanges 25 and 26. Both these flanges pass within tubular end 19, as shown in dotted outline in Fig. 1, the flange 25 entering the slot 23 and pressing against the square end 22, thereby forming a smooth bottom to the channel 11 at each corner and locking the corner. Flanges 25 and 26 also give plenty of surface for soldering this joint securely, and the thin sheet metal is given a slight depression, as at 27, so as to give a perfectly smooth outer surface to the joint and one of great strength. This construction of the frame also leaves the inner side perfectly smooth, so that the drainage to the drip-hole 21 is perfect, there being no obstruction.

The screen-wire 28 is attached to the frame in channel 11 by means of the closed-tube strip 29, which is of light weight, so that the sides of the tube will spring slightly when pressed into channel 11. The ends of the beads 15 in the rear wall of channel 11 form locking projections which hold the tube-lock strip within the channel and with edge 14 of the sheet metal on the flange form a locking means which hold the tube 29 firmly in place.

It is apparent that the screen-wire 28 can be cut the desired size to fit the frame, and the tubular strips 29 can be cut the desired length to fit evenly within the channel 11 at each side. When it is desired that an exceedingly strong channel 11 should be made

in order to resist the tension of wire fabric 28, flange 12 may be reinforced by a channel-strip 31, inserted between the two plates which regularly form the said angular flange 12, as shown in Fig. 5, the lower side and inner corner being cross-beaded to correspond to the beads in the outer plates, as shown at 32 in Fig. 6. Reinforcing channel-strip 31 may also be soldered to the adjacent edges of the strip forming the channel, thereby making an exceedingly strong angular flange for the channel where great strength is needed and not adding to the weight of the tubular part of frame sides 10.

As is well known, provision must be made in the channel-strips on the window-casing at one side for the elliptical springs 33, while the other side of the frame must have a shallow channel-strip. This gives an uneven and unsightly appearance to these two channel-strips. We consequently make the two channel-strips 16 and 17 of equal depth and insert a filler 34, which consists of an inverted channel-strip and gives the correct depth to channel-piece 17. The edges of the thin sheet-metal channel-strips are preferably turned inward, so as to give a rounding surface against the screen-frame 10 in order not to mar the same, as would the sharp edges of an unturned edge.

We claim as new—

1. In a metal screen, a frame, the side and end pieces of said frame each consisting of a solid tube, a channel along said tube, screen-wire, and a locking means to hold said wire in said channel.

2. In a metal screen, a frame, the side and end pieces of said frame each composed of strips of bendable sheet metal formed in a brazed tube, a channel along said tube, screen-wire, and a locking-strip to hold said wire in said channel.

3. In a metal screen, a frame, the side and end pieces of said frame each composed of strips of metal formed in a tube with lapped edges, said lapped edges brazed together and formed in a channel along said tube, screen-wire, and a locking-strip to hold said wire in said channel.

4. In a window-screen, a frame consisting of side and end pieces having a channel therein, screen-wire, and a metallic tube-locking strip for holding said wire in said channel.

5. In a window-screen, a frame, each side of said frame formed by a strip of sheet metal having the central portion formed in a tube and the edge portions of said sheet metal united by solder and shaped in a lengthwise angular flange to form a channel with one side of said tube, screen-wire, and a retaining-strip to fit said channel.

6. In a window-screen, a frame, the side

and end pieces of said frame consisting of a solid tube, each of said pieces formed from a strip of sheet metal, a channel formed by the bent-up double-edge portion of said strip and one side of said tube, spaced crosswise ribs pressed in said sheet metal to brace said tube and channel, screen-wire, and a retaining-strip for said wire to fit said channel.

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:

A. W. KETTLE,

I. A. ELLSWORTH.