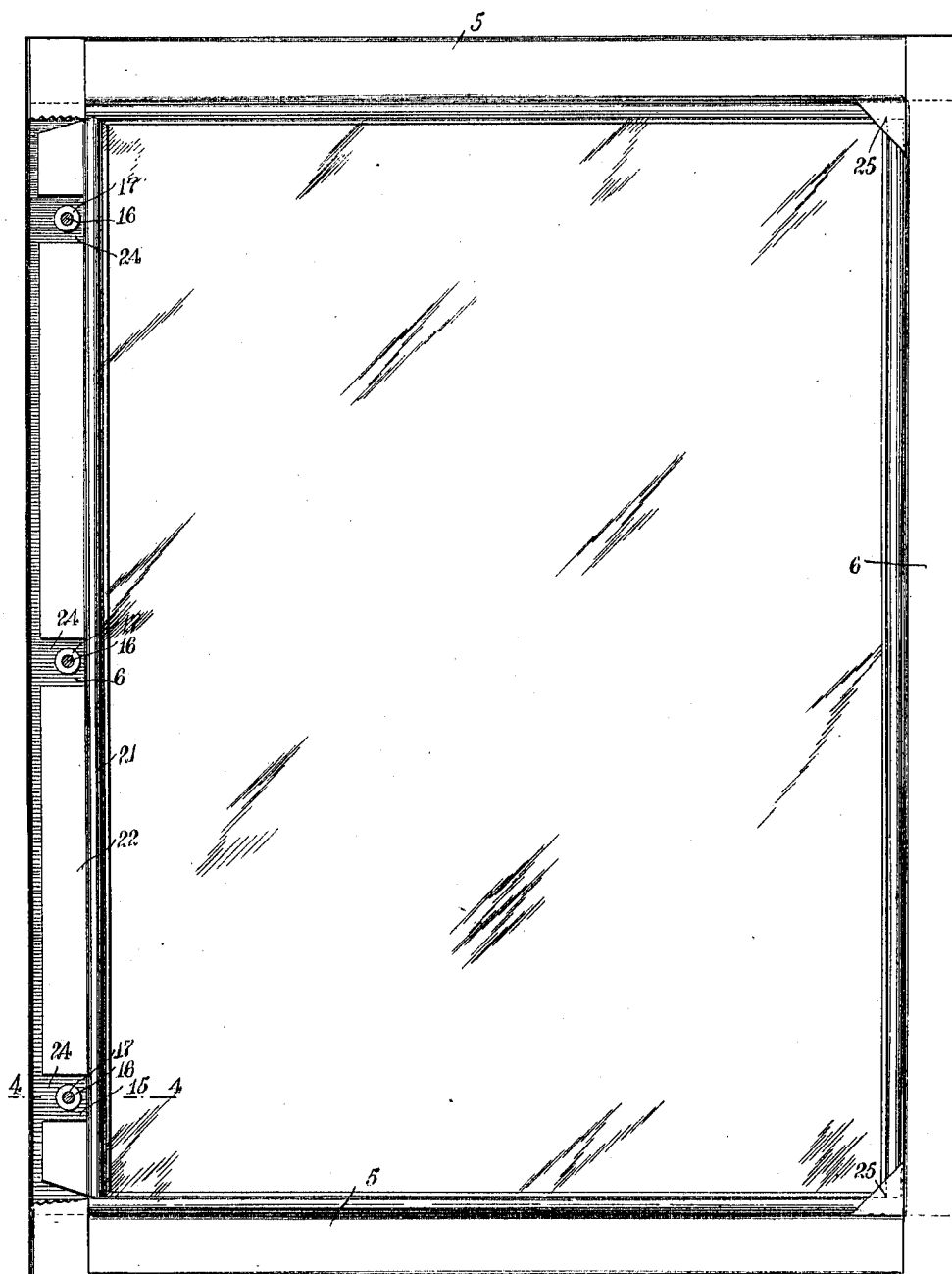


W. P. LAWRENCE.
SHEET METAL FRAME.
APPLICATION FILED JUNE 24, 1910.

988,360.

Patented Apr. 4, 1911.

3 SHEETS—SHEET 1.



WITNESSES:
James H. Fife
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Fig. 1.

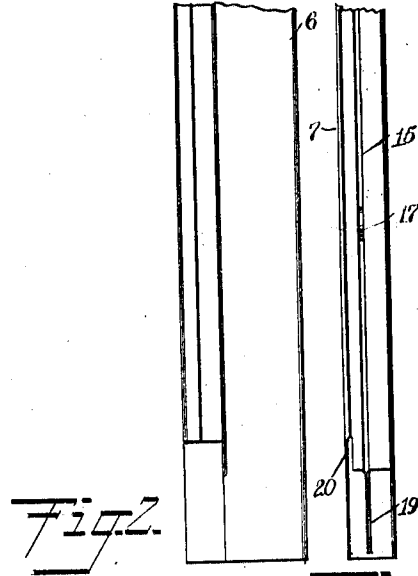
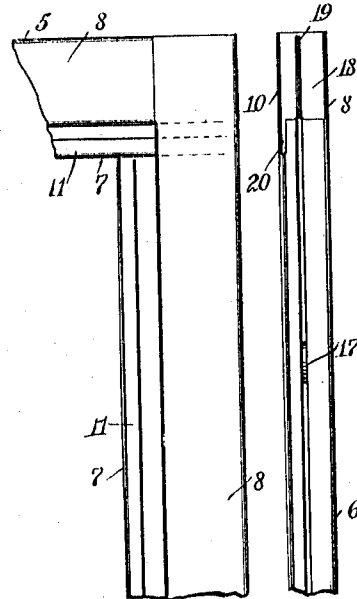
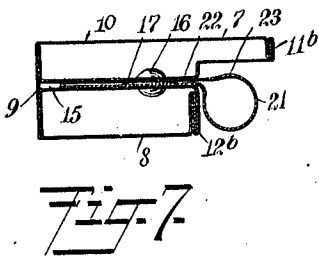
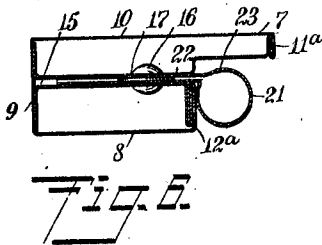
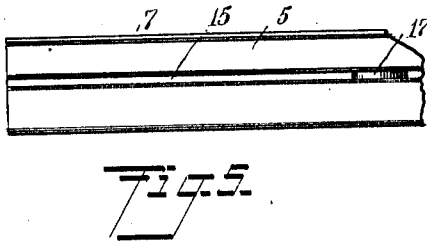
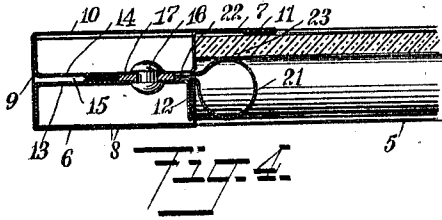
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2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

WILLIAM P. LAWRENCE, OF COLORADO SPRINGS, COLORADO.

SHEET-METAL FRAME.

988,360.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed June 24, 1910. Serial No. 568,694.

To all whom it may concern:

Be it known that I, WILLIAM P. LAWRENCE, a citizen of the United States, and a resident of Colorado Springs, in the county of El Paso and State of Colorado, have invented a new and Improved Sheet-Metal Frame, of which the following is a full, clear, and exact description.

The invention is an improvement in frames of sheet metal, more especially such frames as are designed to contain glass panels, such as mirrors, windows, doors, pictures, etc.; and has in view a frame which acts to firmly retain the glass without the use of numerous screws, putty, or similar fastenings; also in which the glass is readily removable and replaceable, whereby the renewal of the glass requires but little work or skill.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front or inside elevation of a frame constructed in accordance with my invention, one side of one of the stiles of the frame being broken away to show the construction of the removable molding; Fig. 2 is a similar fragmentary view of the frame with the molding removed; Fig. 3 is an inner edge view of that portion of the frame shown in Fig. 2; Fig. 4 is a section on the line 4-4 of Fig. 1; Fig. 5 is a fragmentary inner edge view of one of the rails of the frame; Fig. 6 is a cross-section of the frame, showing a modification of the construction; and Fig. 7 is a like section, showing a still further form of the invention.

For convenience of description I will term the top and bottom sides 5, 5 of the frame the rails, and the other sides 6, 6 of the frame the stiles. It is, however, to be understood that the sides 6 will in instances be arranged at an angle to the vertical or be turned so as to bring the sides 5, 5, into vertical positions, in which case they would properly be the stiles, and the sides 6, 6, the rails, without affecting the invention. Each side of the frame is in the nature of a sheet metal tube; in the present embodiment of the invention shown to be of rectangular form in cross-section, with a flange 7 extending inwardly from the inner edge and adjacent to one face of the tube. In the construction

of this tube, as shown in Figs. 1 to 4 inclusive, the inner face 8, outer edge 9, and outer face 10, as also the outer face of the flange 7 and that portion of the inner edge of the tube adjacent to the inner face 8, are made of a single piece of sheet metal, with the edge of the metal forming the flange folded inwardly, as indicated at 11, and the edge of the metal forming that portion of the inner edge of the tube also folded inwardly, as indicated at 12. Within this portion of the frame thus formed are provided two oppositely-arranged sheet metal channels 13 and 14 respectively, the bottoms of the channels being placed side by side and spaced apart to form a groove 15, in which position the channels are secured together along the length of the tube by a number of rivets or equivalent devices 16, on which are arranged between the channels, spacing washers 17. The channel 13, adjacent to the inner face 8 of the tube, has one flange resting against the outer edge 9 of the tube and extending to the face 8, and its opposite flange extended and folded upon itself and forming a seam with the inwardly-turned portion or flange 12 at the inner edge of the tube. The channel 14 adjacent to the outer face or wall 10 of the tube has one of its flanges bearing against the outer edge 9 of the tube, and extending to the wall 10, and its opposite flange extended inwardly along the flange 7, and received under and seamed with the inwardly-turned portion or flange 11.

The construction of the tube for both the stiles and rails is the same, except that in one or the other, shown in the present embodiment of the invention to be the stiles 6, the wall forming the inner edge of the tube is removed at each end a distance equal to the depth of the tubular portion of the rail, as indicated at 18, in Fig. 3, and the adjacent sides of the channels are flattened together for this depth, as indicated at 19, and are adapted to pass into and fit the groove 15 in the rails. A slot 20 is also formed as a continuation of the removed portion of the end wall at the end portions of the stiles, and is of a depth and width to receive the glass-retaining flange 7 of the rail. This construction, of course, requires the manufacture of the stiles slightly thicker than the rails, so that the rail can be passed in between the inner and outer walls or faces 8

and 10 of the stile and fit snugly therebetween when the frame is assembled.

For firmly retaining the glass in place, each side of the frame is provided with a sheet metal molding comprising a bead 21 and a tongue 22, the bead and tongue being constructed of a single piece of sheet metal by bending the metal at an intermediate point into tubular form to produce the bead, 10 and extending the free ends or portions of the metal from the bead slightly inwardly toward the center of the bead from a tangential direction, whereby the greater portion of the bead is arranged at one side of 15 the tongue and a slight protuberant portion 23 is arranged at the opposite side. The tongue 22 is adapted to snugly fit in the groove 15 of the tubular portion of the frame, and at the points where the rivets 16 are provided it is notched, as indicated at 24, 20 which permits of the insertion of the tongue for its full depth into the groove so that the bead 21 is brought close to the inner edge of the tube, the tongue being inserted so as to 25 throw the protuberant portion 23 of the bead adjacent to and against the glass, the latter when in place being firmly bound between this portion of the bead and the flange 7. The frame is secured together at the 30 corners in any suitable way, as, for example, by solder or brazing, and the molding is removably retained in place in any approved manner, as, for example, by the ornamental corner pieces 25.

35 In the form of the invention shown in Fig. 6, the construction of the stiles and rails differs only from the embodiment of the invention described, in separating the inner and outer walls of the glass-retaining flange 40 7 a substantial distance, and seaming them together at the inner edge with the seams 11^a, 12^a, thus produced, extending at approximately right-angles to the plane of the frame and located so as to be obscure when 45 the glass is in place.

The form of the invention illustrated in Fig. 7 is in all respects the same as that shown in Fig. 6, except that the seams 11^b and 12^b, corresponding to the seams 11^a and 50 12^a, are reversed so that they show from the exterior and give a beaded effect.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

55 1. A frame comprising sheet metal stiles and sheet metal rails, each having a panel-retaining flange extending from its inner edge, and each provided with a groove extending along its length, and a molding for 60 each stile and each rail, having a tongue adapted to fit into the groove thereof and provided with a protuberant portion arranged to bind the panel to the flange and projecting inwardly of the plane of the 65 tongue.

2. A frame comprising stiles and rails of sheet metal, each stile and rail of tubular construction and having channels arranged therein, with the bottoms of the channels placed side by side and spaced apart, forming a groove extending from the inner edge 70 of the stile or rail, one side face of each stile and rail and the adjacent channel extended to form a panel-retaining flange, and a molding for each rail and stile adapted to 75 bind the panel to the flange, and having a tongue extending into the groove.

3. A frame having adjoining side members of sheet metal tubular construction, each member having a groove at its inner 80 edge extending along the length thereof and provided with an inwardly-extending panel-retaining flange, and a molding for each of said members to bind the panel to the flange, having a tongue adapted to fit into the 85 groove, with the walls of the groove of one of said members flattened together at the end and fitting within the groove of the other member, and the inner and outer walls of one member lapping over and receiving 90 the walls of the opposite member.

4. A frame comprising adjoining side members, each member of sheet metal tubular construction and provided with an inwardly-extending panel-retaining flange, 95 each member having channels arranged therein, with the bottoms of the channels placed side by side and spaced apart, providing a groove extending along the length and through the inner edge of the member, 100 and a molding for each member to bind the panel to the retaining-flange thereof, having a tongue to fit into the groove, the bottom walls of the channel of one of the members pressed together adjacent to one end and 105 fitting into the groove of the other member, and with the inner wall of one of said members removed to receive the other member, and provided with an extended slot to receive the flange of the said other member. 110

5. A frame comprising stiles and rails, each stile and each rail of sheet metal and of tubular construction, each stile and each rail having therein oppositely-arranged 115 channels extending lengthwise thereof, with the bottoms of the channels spaced apart and secured together, forming a groove extending through the inner edge of the stile or rail, the flanges of the channels at one 120 side abutting the outer edge of the stile or rail and extending to the inner and outer walls thereof, the other flange of one of said channels having a folded seam with the adjoining wall of the stile or rail, and the corresponding flange of the other channel 125 having a folded seam with an extended portion of the opposite wall of the stile or rail and forming in connection therewith a panel-retaining flange, and a sheet metal 130 molding for each stile and rail, having a tu-

bular bead arranged to bind the panel to the flange, and provided with a tongue fitting into the groove formed by the channels.

6. A frame having adjoining side members, each in the form of a sheet metal tube, with a groove extending along its length and leading thereinto from the inner edge, each member having an inwardly-extending panel-retaining flange, and a sheet metal molding for each member, having a tubular bead, with the metal forming the tubular bead extended therefrom to form a tongue adapted to fit into the groove of the member, with the tongue arranged relatively to the bead to provide a protuberant portion of the bead at the inner side thereof, arranged to bind the panel to the flange.

7. In a metal construction for frames, a sheet metal tube having a panel-retaining flange extending from one edge thereof and provided with sheet metal channels therein extending lengthwise thereof, with the bottoms of the channels spaced apart to provide a groove extending into the tube from one edge adjacent to the said flange, the flanges of the channels at one side bearing on the opposite edge of the tube, and the other flange of one of said channels having a folded seam with the adjacent wall of the tube, and the corresponding flange of the other channel extended along the flange and having a folded seam therewith at the edge.

8. In a metal construction for frames, a sheet metal tube having a panel-retaining flange extending from one edge thereof and provided with sheet metal channels therein extending lengthwise thereof, with the bottoms of the channels spaced apart to provide a groove extending into the tube from one edge adjacent to the said flange, the

flanges of the channels at one side bearing on the opposite edge of the tube, and the other flange of one of said channels having a folded seam with the adjacent wall of the tube, and the corresponding flange of the other channel extended along the flange and having a folded seam therewith at the edge, and a sheet metal molding having a tubular bead to bind the panel to the flange, with a tongue extending from the bead adapted to be received in the said groove.

9. In a metal construction for frames, a sheet metal tube having intermediate walls therein spaced apart and forming a groove leading in from the inner edge, the tube having a panel-retaining flange extending therefrom adjacent to the groove, and a sheet metal molding having a tubular bead arranged to bind the panel to the flange, and provided with a tongue adapted to removably fit within the said groove.

10. In a metal construction for frames, a sheet metal tube having a panel-retaining flange extending from its inner edge and provided with flanged sheet metal members arranged therein and bearing against the walls thereof, with the members secured together in spaced relation, forming a groove extending through the edge of the tube adjacent to the flange, and a sheet metal molding having a hollow bead adapted to bind the panel to the flange, and provided with a tongue to fit within the said groove.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM P. LAWRENCE.

Witnesses:

A. HOLLAND,
H. M. CAMPBELL.