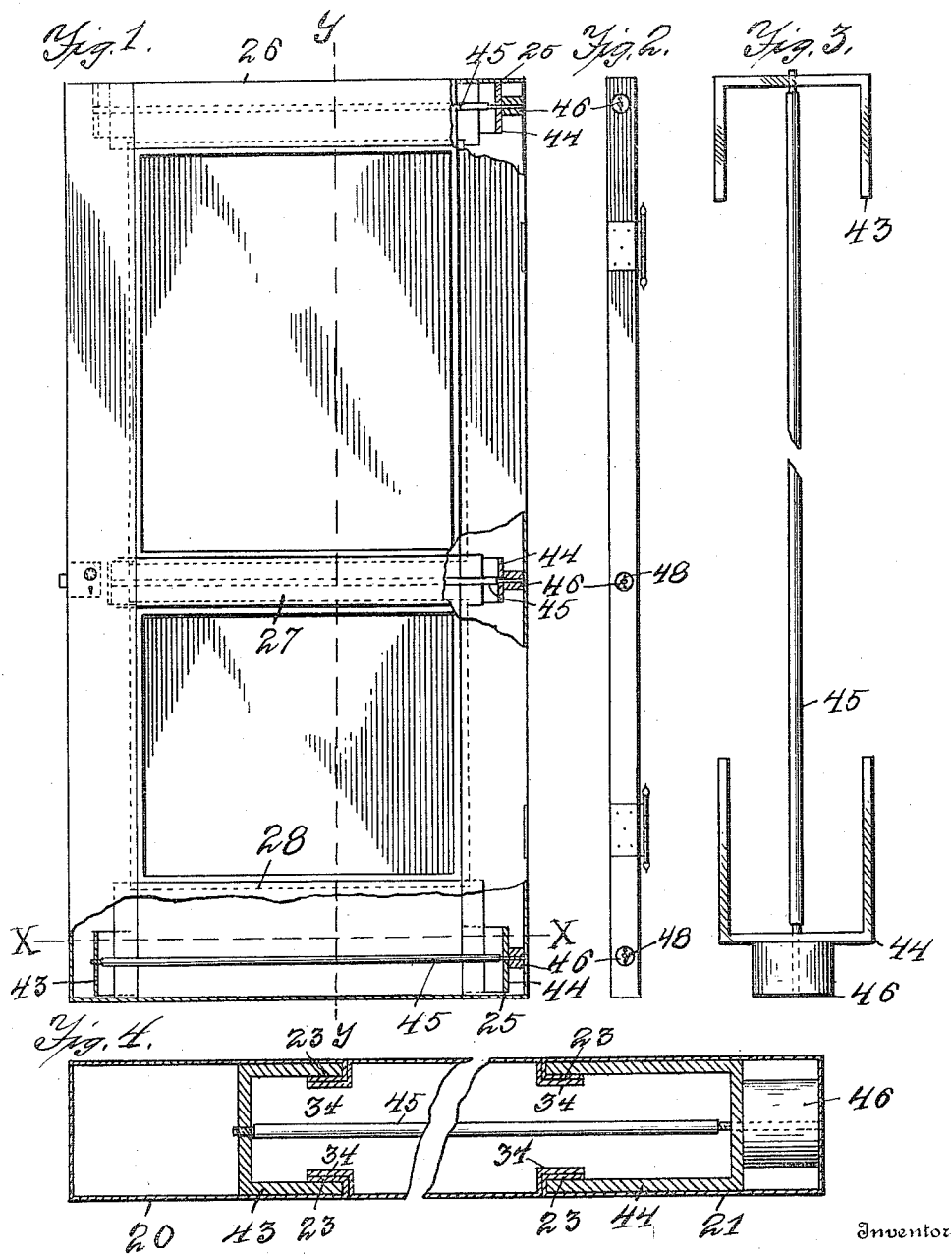


H. C. LINDROS.
SHEET METAL DOOR CONSTRUCTION.
APPLICATION FILED JUNE 30, 1910.

985,912.

Patented Mar. 7, 1911.

3 SHEETS—SHEET 1.



Witnesses
E. O. Hultgren
J. A. Ellsworth.

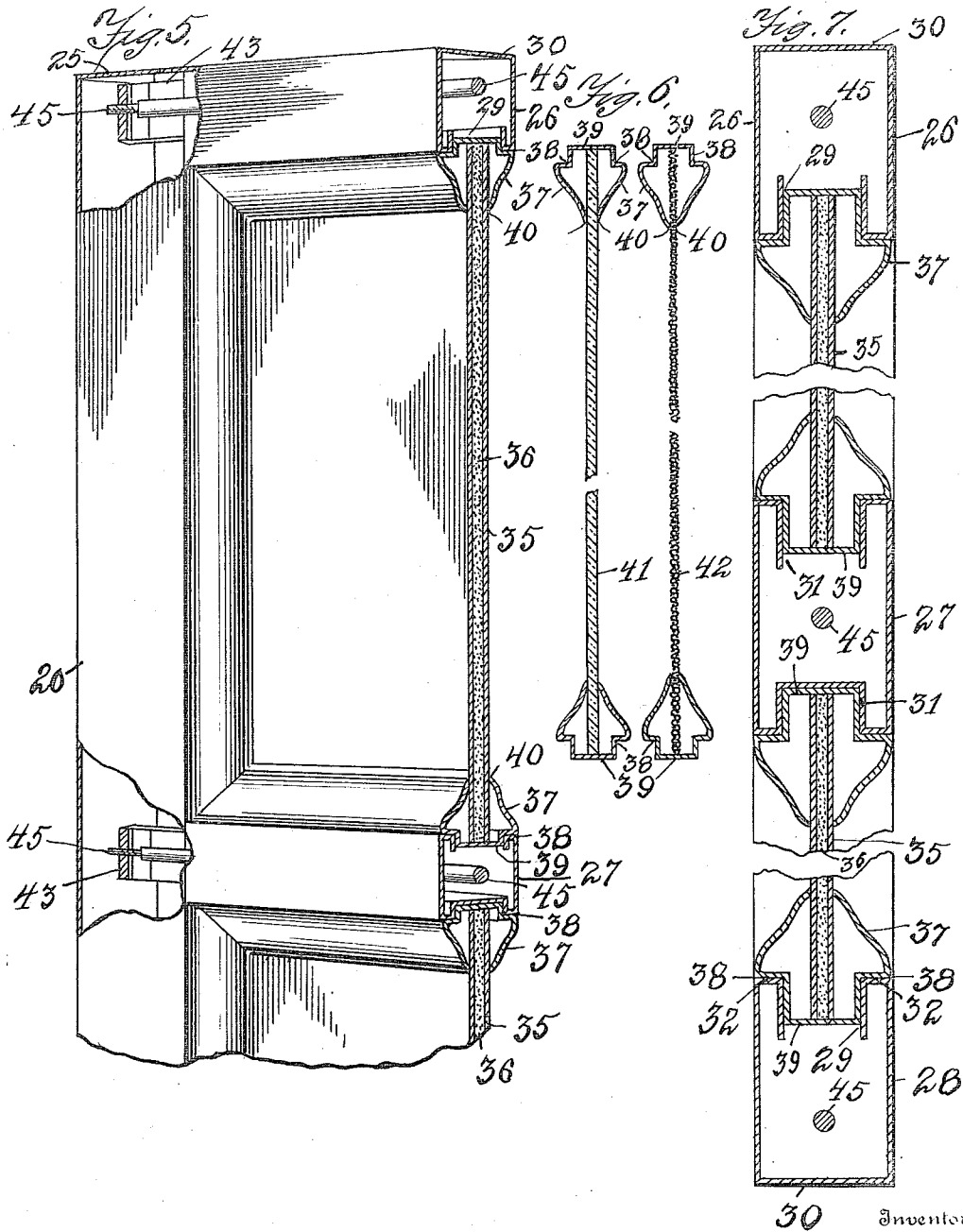
Inventor
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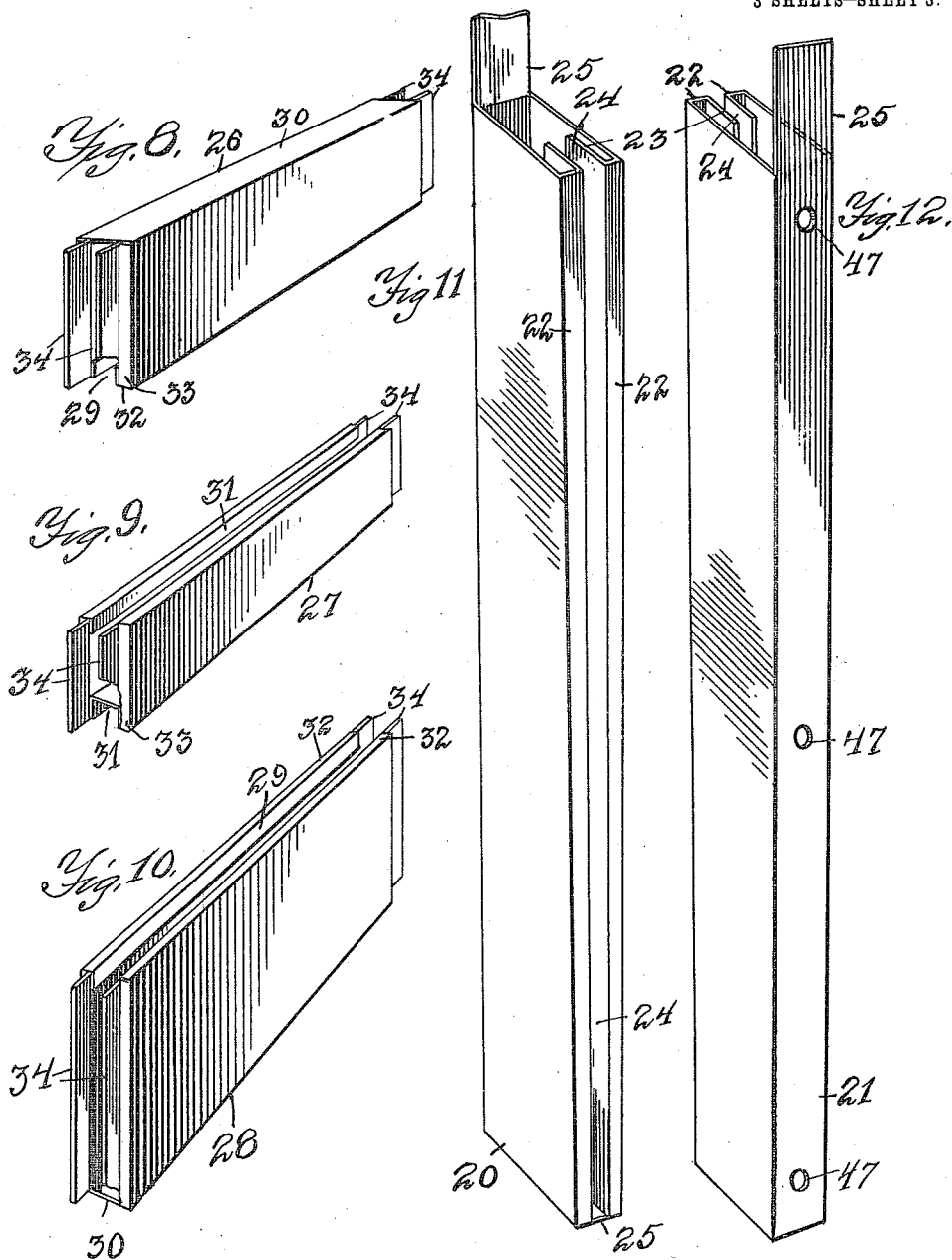
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UNITED STATES PATENT OFFICE.

HJALMER C. LINDROS, OF JAMESTOWN, NEW YORK.

SHEET-METAL-DOOR CONSTRUCTION.

985,912.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed June 30, 1910. Serial No. 569,736.

To all whom it may concern:

Be it known that I, HJALMER C. LINDROS, a citizen of the United States, and a resident of Jamestown, county of Chautauqua, and State of New York, have invented new and useful Improvements in Sheet-Metal-Door Construction, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The invention relates to hollow sheet metal doors; and the objects of my improvement are to provide a door made of sheet metal of knockdown construction so that the parts of the door may be shipped without being set up and may readily be put together in a simple, firm and durable construction which braces and holds all the parts firmly in place and allows of the insertion of glass, screen, or sheet metal panels, or the exchange of one form of panel for another; and the invention consists in the construction and arrangement of the parts, as shown in this specification and the accompanying drawings and pointed out in the claims.

In the drawings, Figure 1 is an elevation of a door embodying my construction, portions of the door being broken away to show the construction of the same. Fig. 2 is an elevation of the rear edge of the door. Fig. 3 is a detail of the crosswise bolt and binding brackets for holding the parts of the door together. Fig. 4 is a sectional view at line X X in Fig. 1. Fig. 5 is a perspective view of a portion of the door with the cross rails and panels in section. Fig. 6 shows sectional views of glass and screen panels ready for insertion in place of the sheet metal panel, shown in Fig. 5. Fig. 7 is a lengthwise sectional view at line Y Y in Fig. 1, the central portion through each of the panels being broken away. Fig. 8 is a perspective view of the top cross rail; and Fig. 9 is a similar view of the middle cross rail; and Fig. 10 is a similar view of the bottom cross rail, parts of the end flanges being broken away to show the arrangement and construction of the same. Fig. 11 is a perspective view of the front stile without the top end cap for the same; and Fig. 12 is a similar view of the rear stile.

Similar numerals refer to corresponding parts in the several views.

The frame of the door, composed of the stiles and cross rails, is made in the following manner: The numeral 20 indicates the front stile and the numeral 21 the rear stile. Stiles 20 and 21 are each made in the form of a rectangular tube with their inner edges turned at right angles at 22 to form flat bearing faces. Said inner edges are then preferably turned within the tube as at 23 thereby providing a groove 24 between the two inturned edges 23 for a purpose hereinafter described. The ends of the stiles 20 and 21 are capped by a suitable piece 25, preferably attached by soldering. The numeral 26 indicates the top cross rail, the numeral 27 the middle cross rail, and the numeral 28 the bottom cross rail. Each of the cross rails is preferably made from one piece of sheet metal. The top and bottom cross rails 26 and 28 are formed with grooves 29 on their inner edges, the outer edges being left flat to form the top and bottom of the door. The central cross rail 27 is provided with a groove 31 on each edge. In making the cross rails they are bent in the rectangular tubular form according to the proportions desired, the top and bottom cross rails having the square inturned edges 32 at each side corresponding to the square inturned edges 22 of the stiles, thereby forming the groove 29 therebetween. The ends are turned inwardly at right angles at 33 at the desired limit of the length of the cross rail and then extended in the flanged ends 34, the flanged ends 34 fitting within the groove 24 in the stiles and the square angular face 33 fitting against the faces 22. In the lower groove 31 on the central cross rail 27 the sheet metal is bent inwardly and extends across the bottom of the groove, so it is apparent that the entire middle cross rail can be made from one piece by suitable dies.

The sheet metal panels 35 are preferably made with two plates of sheet metal with a sheet of asbestos or non-combustible material 36 therebetween. The molding 37 is made in one piece for both sides of the edge of panel 35, being drawn in the hollow tubular form, as shown in section, with the lengthwise angles 38 on each edge adjacent the panel edge, thereby forming the tongue 39 which fits within the grooves 29, 31 or 24 according as it is desired to place the tubular sheet metal panel molding within

the stiles or cross rails. The panel 35 is inserted between the adjacent edges 40 of the slotted side of the tubular molding, the tubular molding being mitered at the corners and attached to the panels 35 thereby forming a frame for said panels before insertion in the door frame.

It is obvious that instead of the sheet metal panel 35 a glass panel 41 may be inserted in the molding 37 or wire screen fabric 42 may be inserted in the place of panels 35 since the tubular molding 37 forms a complete frame, as it were, for the panel and any suitable material may thus be inclosed within the tubular molding.

In order to bind the parts together the angular U-shaped bracket pieces 43 and 44 are provided, which preferably fit closely within the sheet metal stiles 20 and 21 with the bracket ends against the inner sides of inturned edges 23, thereby bracing the sheet metal stiles against pressure from without. Cross rods 45 are attached to brackets 43 within the front stile, preferably by screw thread connection so that the rod can easily be removed by turning the same. Said rods extend crosswise of the door through each of the cross rails and through a second bracket 44, bracket 44 in the rear stile being usually somewhat longer than bracket 43 in the front stile to bring the face of the bracket nearer to the rear edge of the door. The cross rod 45 is of sufficient length to extend through the bracket 44 and to the rear edge and a round nut 46 is screwed on to the rear end of cross rod 45 pressing against the bracket 44. The nut 46 is inserted through a suitable hole 47 in the rear edge of the door. Nuts 46 have spanner holes 48 therein for inserting a wrench to turn the nut.

In assembling the door, the stiles 20 and 21 are provided with one end having a cap thereon, the other end being open. The lower cross rail 28 is slipped within the groove 24 of stiles 20 and 21, the flanged ends 34 extending out between the flanges 23 and pressing firmly against the same, the flat angular faces 33 fitting squarely against the angular faces 22. Brackets 43 and 44 with cross rod 45 are then slipped into place. The brackets fit closely within the return bend formed by the inturned ends 23 of the stiles. The nut 46 is then inserted through the opening 47 and turned to place on the end of rod 45, rod 45 having been first screwed into the bracket 43 and inserted through the bracket 44. This draws the lower end of the stiles 20 and 21 firmly against the ends of the cross rail 28 and firmly holds all the parts in place. The lower panel 35 having been assembled with the molding 27 around the edges, as hereinbefore described, is slipped within the grooves 24, the tongue portion 39 being inserted in the grooves 24 and 29 and the

angles 38 fitting squarely against the angular faces 22 and 32. The middle cross rail 27 is then inserted and assembled with brackets 43 and 44 and cross rod 45 and nut 46 the same as the lower cross rail. After this the upper panel 35 is slipped in place the same as the lower panel and the top cross rail 26 is inserted the same as the other cross rails. The nuts 46 are left loose so as to slide the parts into place and yet hold them until the cross rails and panels are in place upon the stiles. The nuts 46 are then drawn firmly to place, thereby holding all the parts rigidly so that the door cannot sag or give at the joints. The upper ends of the stiles 20 and 21 are then capped, thereby finishing the door. After the door is assembled it may be taken apart by removing the three nuts 46 and cross rods 45, thereby allowing the rear stile to be withdrawn from the other parts and permitting the insertion of any of the other parts, as for example, the exchange of panels, or the insertion of a cross rail, after which the rear stile is returned to place and the nuts 46 again screwed on to the ends of the rods 45.

I claim as new:

1. A sheet metal door comprising a frame composed of stiles and cross rails, oppositely inturned edges of the sheet metal on the edges of said stiles and cross rails to provide a groove therebetween, oppositely turned U-shaped brackets engaging within said inturned edges of said stiles, cross rods and nuts to connect said brackets and draw said stiles against the ends of said cross rails, and suitable panel construction within said stiles and cross rails.

2. A hollow sheet metal door comprising tubular stiles and cross rails having inturned inner edges forming a groove therebetween, end flanges on said cross rails insertible in said grooves of said stiles, oppositely placed U-shaped brackets engaging within the inturned edges of said stiles on each side of said grooves, cross rods and threaded nuts to connect said brackets and draw said stiles and cross rails together, and a panel having projections on each side of the edge thereof to fit within said grooves and bear on the inturned edges of said stiles and cross rails.

3. A metallic door comprising a frame composed of hollow sheet metal stiles and cross rails having grooves on their opposite inturned edges, said cross rails having end flanges fitting within the grooves of said stiles and bearing against said inturned edges, tubular molding formed to fit against the edges of said stiles and cross rails and within said groove on its outer side and having a slot on its inner side, panels to fit within said slotted molding between said stiles and cross rails, oppositely placed U-shaped brackets engaging their ends within

the intumed edges of said stiles on each side
of said groove, cross rods and threaded nuts
to connect said brackets and draw said stiles
and cross rails together and upon said mold-
5 ing and panels, substantially as and for the
purpose specified.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

HJALMER C. LINDROS.

Witnesses:

I. A. ELLSWORTH,
A. W. SETTLE.