Sept. 2, 1958 E. F. ZURAWSKI 2,849,943

LOUVER AND METHOD OF ASSEMBLING SAME

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Fig. 1

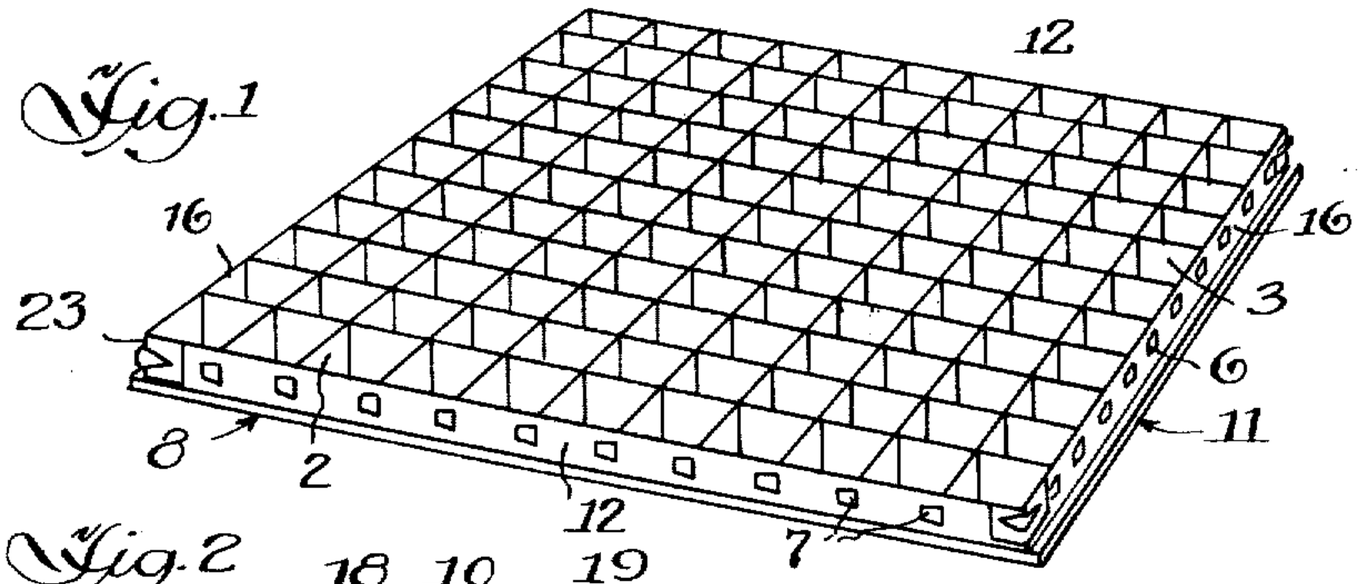


Fig. 2

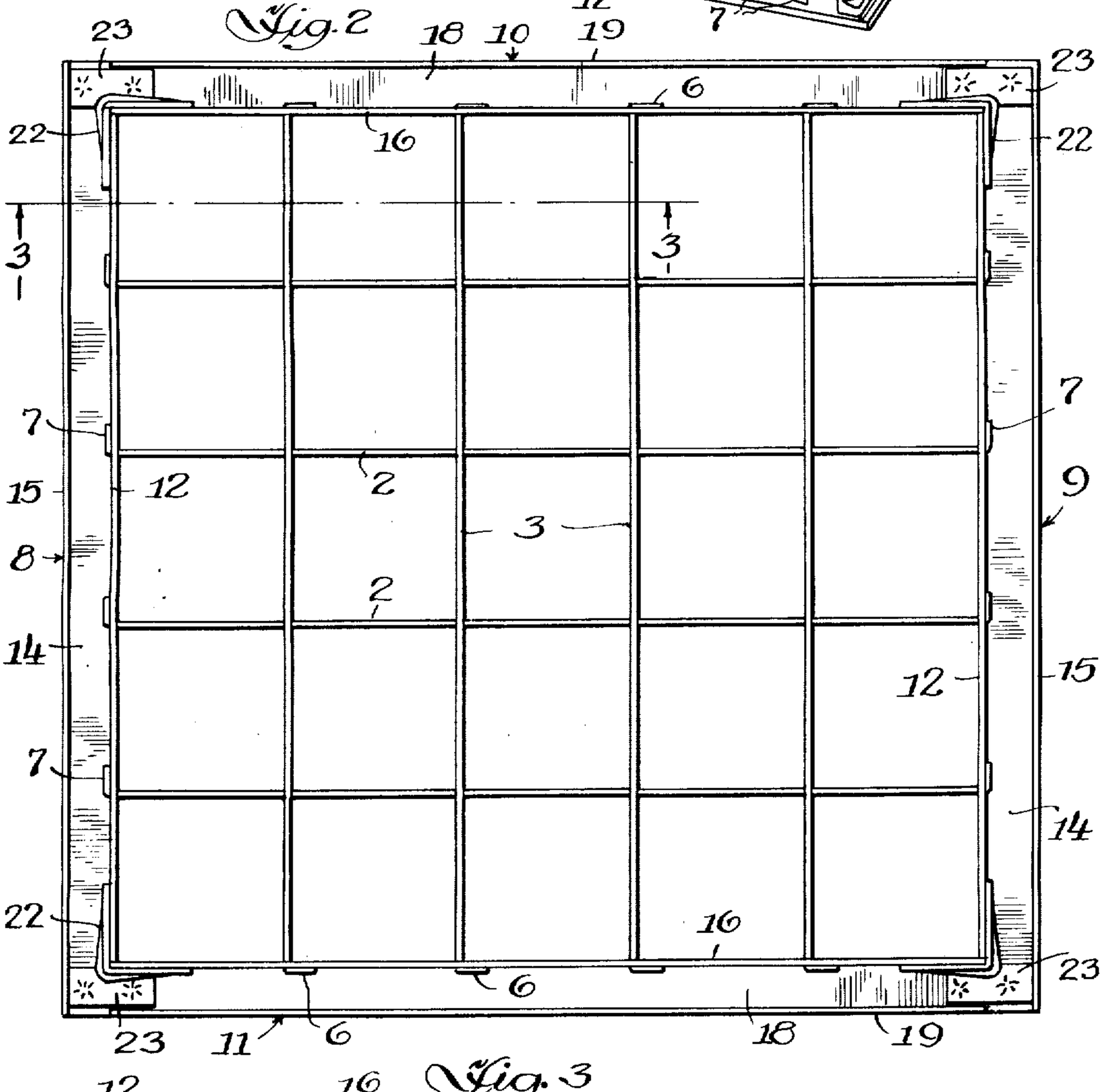
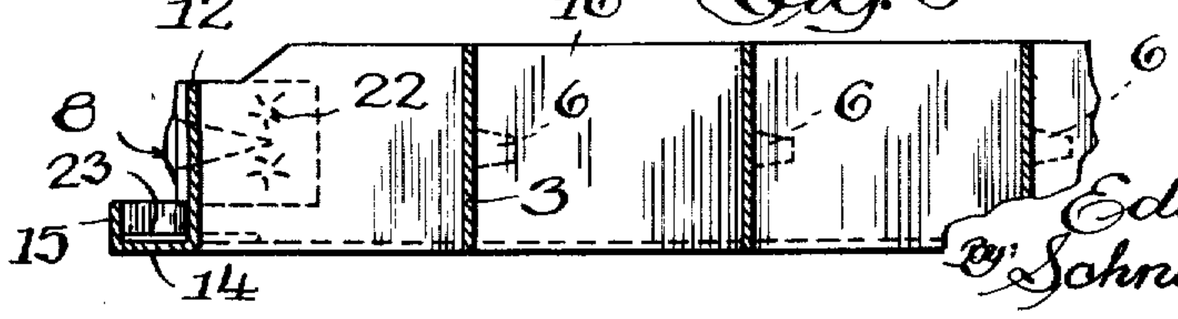


Fig. 3



Inventor,
Edward F. Zurawski,
By Schneider & Dressler, Attys.

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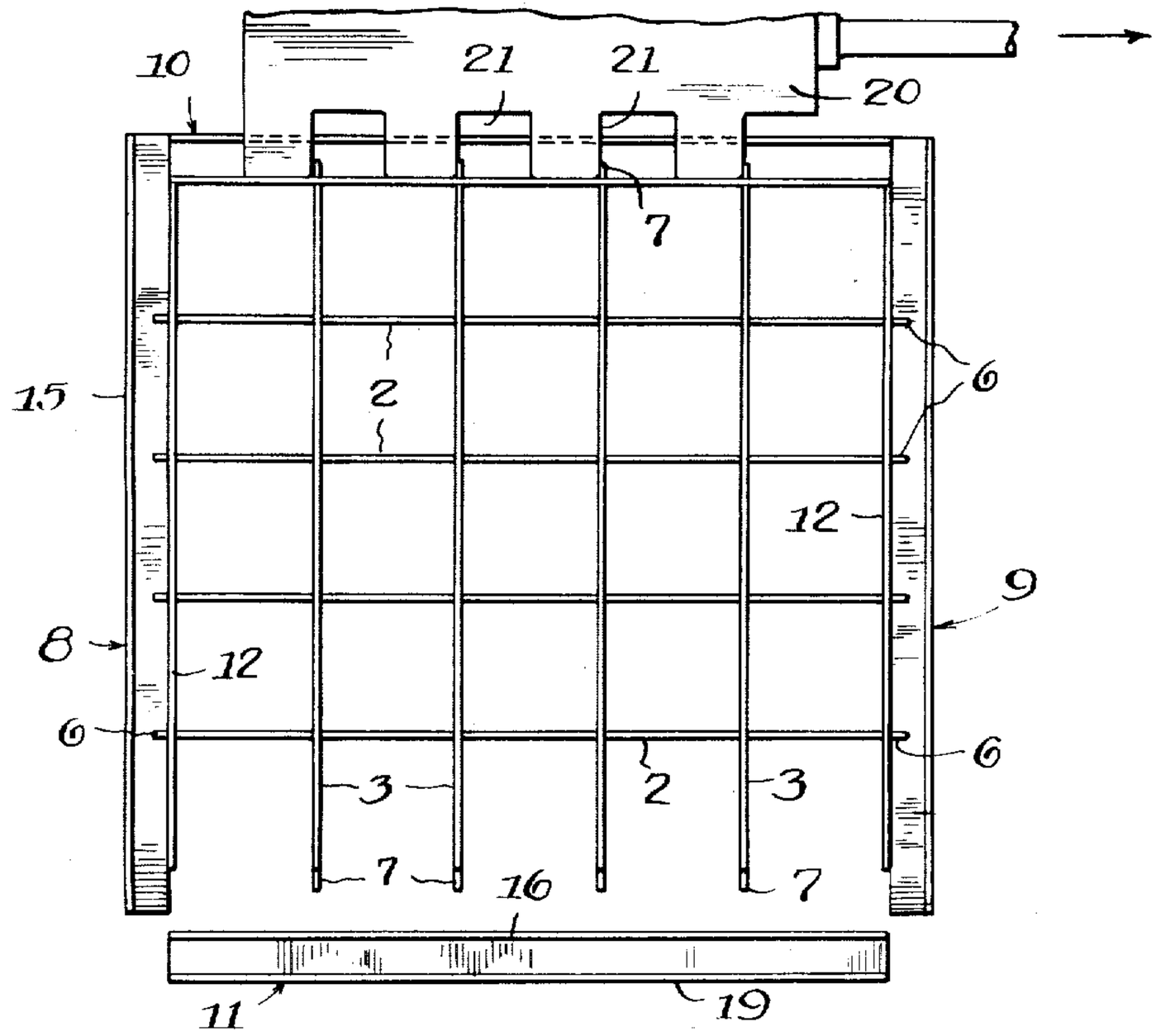
Fig. 4



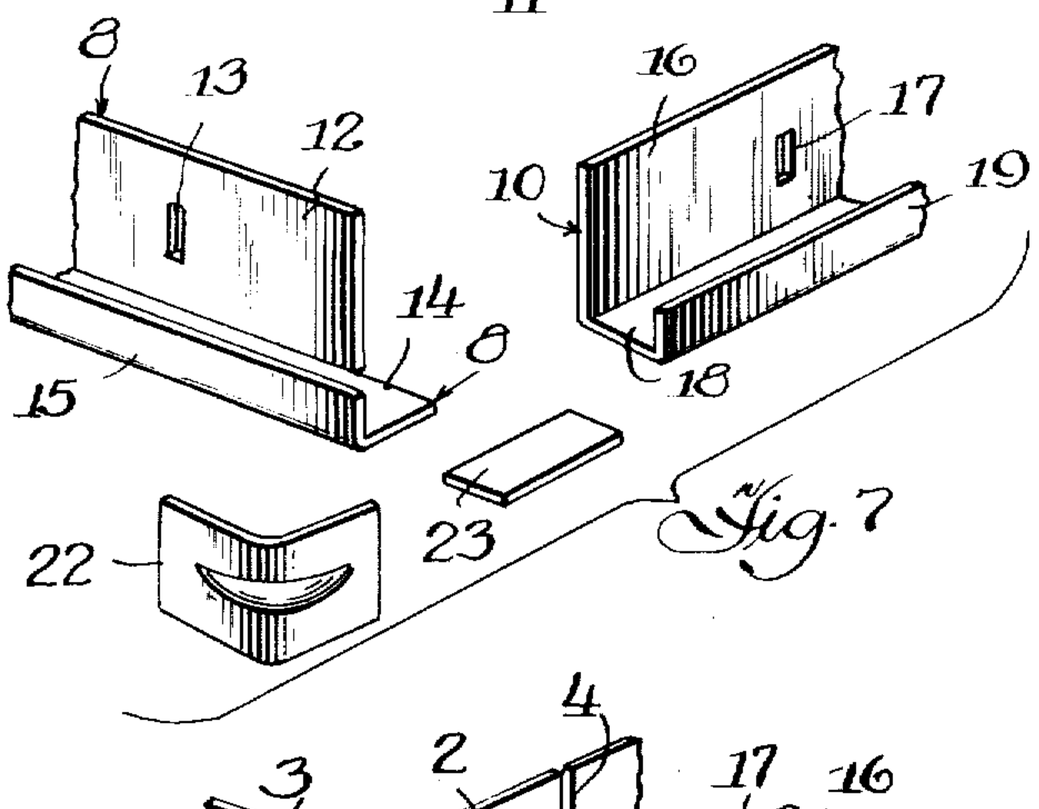


Fig. 7

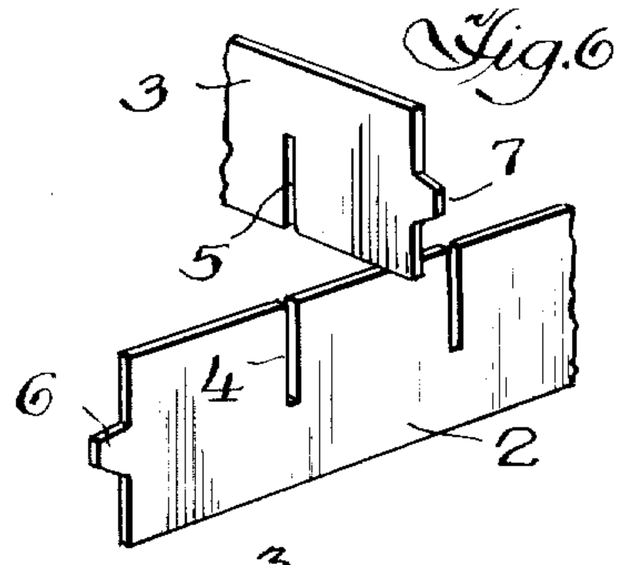


Fig. 6

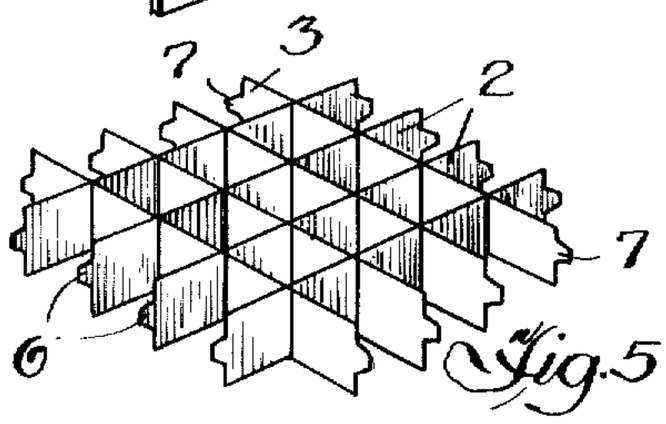


Fig. 5

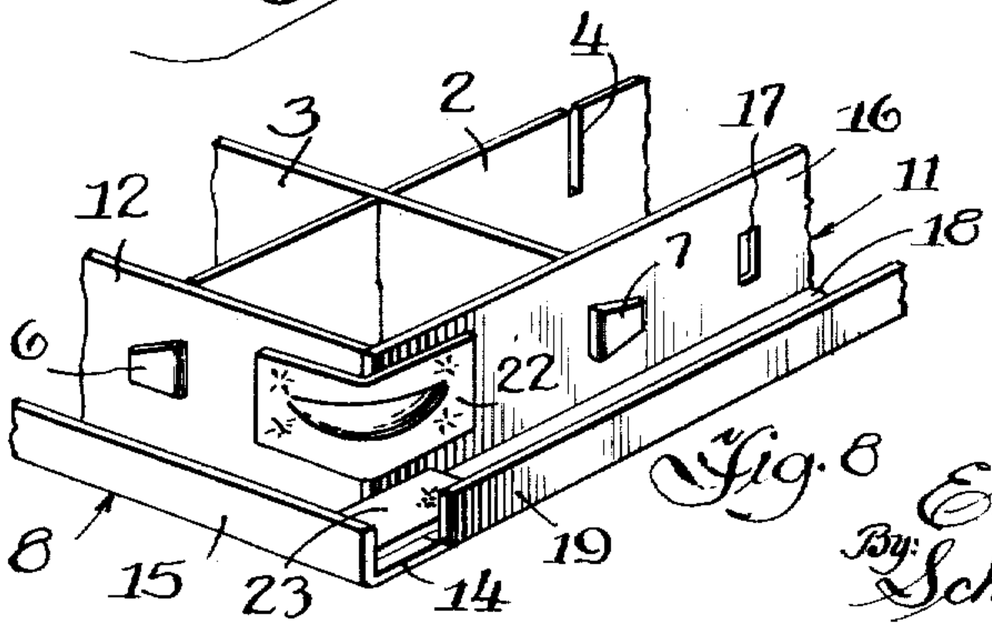


Fig. 8

Inventor,
Edward F. Zurawski
By: Schneider & Dressler, Attys

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LOUVER AND METHOD OF ASSEMBLING SAME

Edward F. Zurawski, Chicago, Ill., assignor to Garden City Plating & Manufacturing Co., a corporation of Illinois

Application August 16, 1955, Serial No. 528,625

2 Claims. (Cl. 98—114)

This invention relates to a louver in which the slats are firmly held against collapse without welding, and to a method of assembling the slats in a frame.

The present invention is concerned with the assembly of louvers, particularly for use with fluorescent light fixtures, but may be advantageously used wherever a plurality of thin metal slats are arranged in intersecting relationship within a frame and rigidly held in position. The frame is preferably square, but may be of any suitable shape.

In structures of this type it has been customary to bend the ends of each slat at right angles and then assemble the slats into a suitable frame, with the bent ends of the slats engaging the inner surface of the frame. The bent ends of the slats were then individually welded to the frame. It has been found that if the frame and slats are sheet steel, the louver has excessive weight. If the louver is made of aluminum, the structure is not sufficiently rigid. The difficulty of welding steel and aluminum together has heretofore prevented the manufacture of louvers partly of steel and partly of aluminum.

In accordance with the present invention, the louver slats are preferably made of aluminum, to reduce the weight of the structure, and the frame is made of steel to provide the necessary rigidity. The steel frame comprises four walls, each provided with a plurality of vertical slots spaced to conform to the spacing between individual slats. Each slat is provided at both ends with an integral tab adapted to project through one of the slots when the slats are assembled within the frame. Each tab is bent over to hold the slats in place. The tabs projecting through the slots of each wall may be bent simultaneously as a unit. If desired, the tabs on all four walls may be bent simultaneously.

Angular steel corner plates are then positioned against each corner of the frame and welded thereto. Preferably each wall has a channel extending outwardly from its lower edge, and flat plates are welded to adjoining ends of the channels to provide additional rigidity. The louver may then be mounted in any suitable fixture or in the ceiling, and the tabs of the slats, which are bent against the outer surface of the walls of the frame, are concealed by the fixture or by the ceiling.

The structure by which the above mentioned and other advantages of the invention are attained will be described in the following specification, taken in conjunction with the accompanying drawings, showing a preferred illustrative embodiment of the invention, in which:

Figure 1 is a perspective view of a louver embodying the invention;

Fig. 2 is a top elevational view of the louver;

Fig. 3 is a cross sectional view, taken along the line 3—3 of Fig. 2;

Fig. 4 is a top plan view showing the tabs on one side of the frame about to be bent against the frame;

Fig. 5 is a perspective view showing the assembly of the slats before the frame is applied thereto;

Fig. 6 is a fragmentary detail perspective view showing the means for interlocking the slats;

Fig. 7 is a fragmentary detail perspective view showing the corner pieces of the frame in disassembled position; and

Fig. 8 is a fragmentary detail perspective view of the corner of the louver in assembled position.

The louver comprises a plurality of slats 2 and 3 arranged in interlocking engagement. Each slat 2 is provided with a plurality of slots 4, and each slat 3 is provided with similar slots 5. Slots 4 and 5 extend transversely from one edge of the slat through approximately one half the width of the slat. Slats 3 which extend in one direction are inverted relative to slats 2 which extend at right angles thereto. Slats 2 and 3 are arranged with corresponding slots 4 and 5 aligned. Each slat 2 is engaged by corresponding slots 5 of intersecting slats 3, and each slat 3 is similarly engaged by slots 4 of intersecting slats 2.

Slats 2 are each provided with a tab 6 extending outwardly from each end in the plane of the slat, and each slat 3 is provided with similar tabs 7. The frame comprises four members 8, 9, 10 and 11, adapted to be secured together at their adjoining ends as hereinafter described, to form a rectangular or square frame. Frame members 8 and 9 are duplicates, and each comprises a wall 12 having a height substantially equal to the height of the individual slats. Each wall 12 is provided with a plurality of slots 13 aligned with the individual slats 3 and arranged to be impaled over the tabs 6. A flange 14 extends outwardly from the lower edge of each wall 12, and terminates in an upwardly extending flange 15 parallel to wall 12 and spaced outwardly therefrom to form a laterally projecting channel.

Frame members 10 and 11 are duplicates, and are similar to frame members 8 and 9. Each frame member 10 and 11 has a wall 16 provided with slots 17 adapted to receive tabs 7 which project therethrough. A flange 18 extends outwardly from the lower edge of each wall 16 and terminates in an upwardly extending flange 19 parallel to wall 16 and spaced outwardly therefrom.

Each wall 12 is recessed from the ends of frame members 8 and 9 a distance equal to the width of flange 18 so that the ends of flanges 14 and 15 extend to the plane of flange 19, and the ends of walls 12 abut the adjoining ends of walls 16, when the frame members are assembled with tabs 6 projecting through slots 13 and tabs 7 projecting through slots 17.

An arm 20, provided on one surface with a plurality of notches 21, is positioned in engagement with one of the frame members. Each tab 6 or 7 projects into one of the notches, and the distance between corresponding side walls of notches 21 is equal to the spacing between tabs 6 or 7 to cause each tab to be engaged by a side wall of one of the notches at the same time. Any suitable means is provided to reciprocate arm 20, and the arm is moved longitudinally relative to the frame member engaged by it to simultaneously bend all the tabs 6 or 7 on said frame member at right angles into juxtaposition with the outer surface of the frame member. Although a single arm 20 is shown in the drawings, four arms may be provided to bend tabs 6 and 7 on all four sides simultaneously.

After tabs 6 and 7 have been bent against the frame members, an angular corner plate 22 is positioned at each corner of the frame, with the legs of the corner plate juxtaposed against the outer surface of two adjoining walls 12 and 16. Each corner plate 22 is welded to both walls to provide a rigid structure. Additional rigidity is provided by a flat plate 23 which is positioned on flange 18 adjacent each end of frame members 10 and 11. Each

plate **23** fits between flange **19** and wall **16**, and extends beyond the end of frame member **10** or **11** into engagement with flange **14** of the adjacent frame member **8** or **9**. Each plate **23** is welded to adjacent end portions of the flange **19** of a frame member **10** or **11** and the flange **14** of an adjoining frame member **8** or **9**. Although it is preferred to bend tabs **6** and **7** against the frame members and then weld the plates **22** and **23** in place, it is possible to weld the plates first, and then bend the tabs.

From the foregoing it will be seen that the individual slats of the louver are securely held in interlocking engagement by frame members that are rigidly secured together. A single bending operation bends all the tabs on at least one frame member, so that a maximum of four bending operations secures opposite ends of each slat in the frame. Since the tabs do not have to be welded to the frame, they may be made of aluminum or other suitable light weight material, while the frame is made of steel to give it the necessary strength. In normal use the tabs projecting through walls **9** of the frame members are not visible, because the entire frame is positioned within an opening provided therefor in a ceiling or within the frame of a fluorescent light fixture.

While I have described a few preferred embodiments of my invention in detail, it will be understood that the description thereof is illustrative rather than restrictive, as many details may be modified or changed without departing from the spirit or scope of my invention. Accordingly, I do not desire to be restricted to the exact construction described.

I claim:

1. A method of making louvers which comprises the steps of arranging a plurality of slats in interlocked relationship with slots in each slat engaging oppositely disposed slats at intersecting points, each of said slats being arranged in a straight line, impaling four slotted independent frame members on tabs projecting from opposite ends of said slats by positioning said frame members outwardly of said slats, aligning the slots of each frame member with the tabs on corresponding ends of slats extending in one direction, and moving each of said frame members inwardly at right angles to the slats having tabs aligned with the slots of said frame member, while maintaining said slats in said straight line arrangement until each end of each frame member abuts the

adjacent end of an adjoining frame member, bending each of said tabs into juxtaposition with the outer surface of the adjacent frame member, and then welding corner plates to the end portions of each of said frame members in parallel relationship to the tabs bent into juxtaposition with each of said frame members.

2. A louver comprising four separate frame members arranged in the form of a rectangle with adjoining ends of said frame members abutting each other, two of said frame members being disposed in parallel planes extending at right angles to the planes of said other two frame members, corner plates secured to adjoining end portions of said frame members to provide a frame rigid in each lateral direction, each corner plate comprising two angular portions disposed in perpendicular planes with each angular portion parallel to the plane of the frame member to which it is secured, each of said frame members having a plurality of parallel slots in predetermined spaced relationship intermediate its height, and two angularly arranged series of slats interposed between said frame members, the slats of each series being aligned with the slots of two parallel frame members, the slats of each series having oppositely disposed parallel slots, the slats of each series being interlocked with the slats of the other series by the interengagement of said slots with the slats of the opposite series at each intersection of said slats, each of said slats having tabs on its opposite ends, each of said tabs projecting through a slot in one of said frame members and juxtaposed against the outer surface of said one frame member, said tabs comprising the sole means for securing said slats to said frame members.

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