Aug. 27, 1946. L. H. DICKELMAN 2,406,593

CORRUGATED BUILDING CONSTRUCTION

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FIG-1-

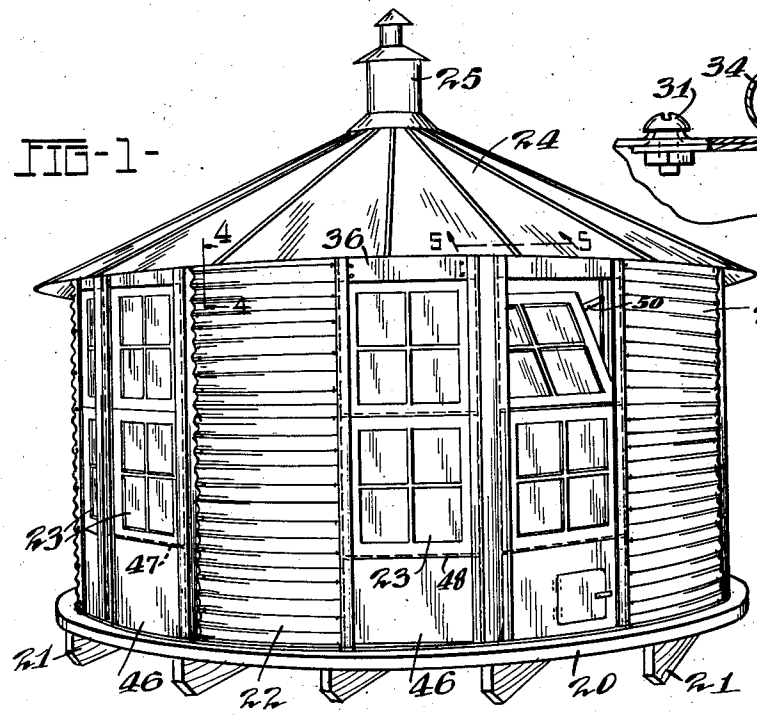


FIG-5-

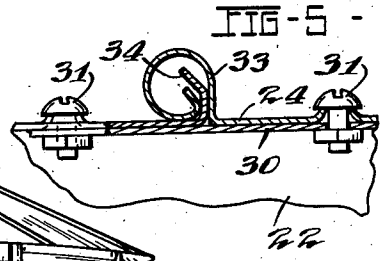


FIG-2-

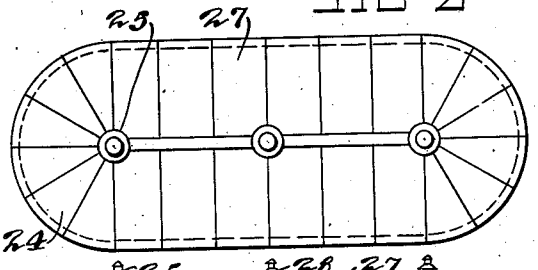
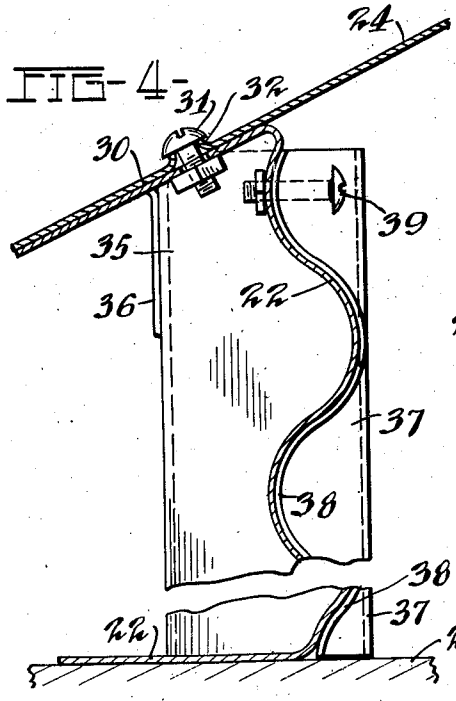


FIG-4-



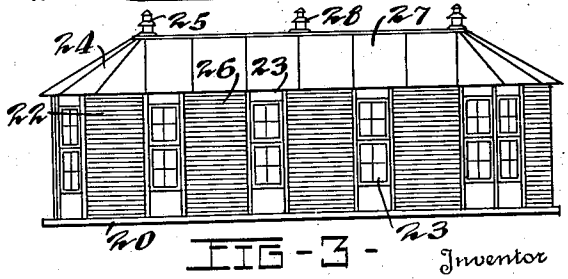


FIG-3-

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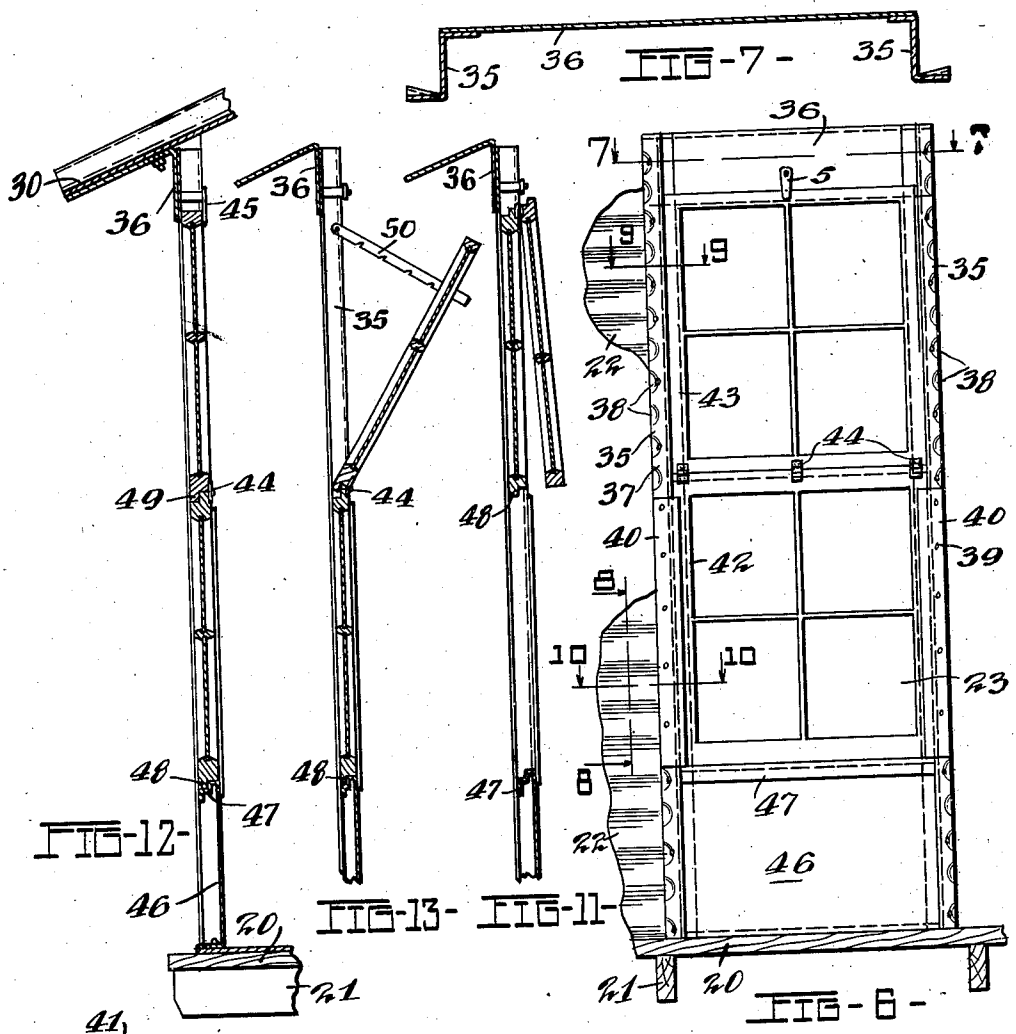

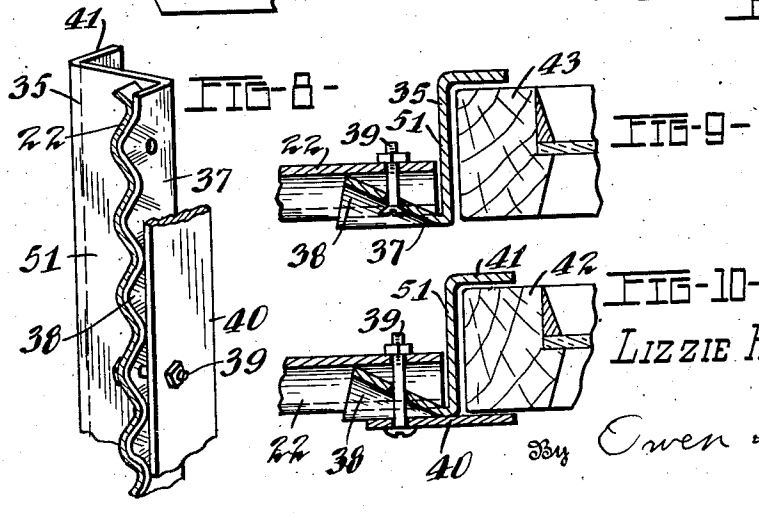

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CORRUGATED BUILDING CONSTRUCTION

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7 Claims. (Cl. 189—2)

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This invention relates to corrugated building construction, and more particularly to brooder houses, laying houses, grain bins and the like.

Specifically, the improvements relate to the uniting of the corrugated plates with the roof plates and with window or door frames or other uprights.

The objects of the invention comprise the uniting of corrugated wall plates of a building with the roof and with window or door frames or other uprights in a manner to form tight joints and prevent undesired drafts in brooder or laying houses or leaks in grain bins or other metal buildings, and to obtain these tight joints with a minimum of cost both in material and in the work of construction.

Minor objects and details of the invention will appear as the description proceeds.

In the accompanying drawings, which form a part of this specification,

Fig. 1 is an elevation of a brooder house in which my invention is embodied.

Fig. 2 is a plan view and Fig. 3 an elevation of an elongated building of the same type in which my invention may be used.

Fig. 4 is an enlarged detail section of the roof and wall plate joint on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged detail section on the line 5—5 of Fig. 1.

Fig. 6 is an enlarged elevation of a window with its frame and portions of connected parts.

Fig. 7 is an enlarged section on the line 7—7 of Fig. 6.

Fig. 8 is an enlarged isometric view, partly in section on the line 8—8 of Fig. 6.

Fig. 9 is an enlarged section on the line 9—9 of Fig. 6.

Fig. 10 is an enlarged section on the line 10—10 of Fig. 6.

Fig. 11 is a partial vertical section of the window being inserted in the frame.

Fig. 12 is a vertical section of the closed window in the frame.

Fig. 13 is a partial vertical section of a window held partially open in its frame.

The brooder house shown in Fig. 1 comprises a floor or platform 20, which may be mounted upon sills or joist 21 which may act as runners when it is desired to move the house from one location to another. The house comprises corrugated wall plates 22, windows 23, roof plates 24 and a cupola or ventilator 25. In Figs. 2 and 3 there is shown an elongation of the building by introducing straight side walls 26 and roof sections 27 between the curving ends. If required or desired, one or

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more intermediate ventilators 28 may be employed. Whether the walls be entirely curved, as in Fig. 1, or partly straight and partly curved as shown in Figs. 2 and 3, or even if they were entirely straight, as in a rectangular building, the special joints now to be described could be employed.

As best shown in Fig. 4, the corrugated side plate 22 is turned outward and downward at the top to form a flange 30 at the same angle as the roof 24 so that the roof plates rest flatly upon this flange, to which they may be secured by bolts 31. It is preferable to punch the bolt holes upward through the roof plates so as to produce a slight raised flange 32 around the hole. This aids in making a tight joint, preventing water from running into the hole, and introducing a slight resiliency tending to keep the flange and roof plate tightly together.

The connection between roof plates may be by flanges such as shown at 33 and 34 in Fig. 5, or other types of roof construction.

The window frames are composed chiefly of side uprights 35 which are Z shaped in cross section, as shown in Figs. 7 to 10. Two uprights 35 are connected at the top by a filler plate 36. Each upright has a flange 37 turned outward from the window, and these flanges are pressed to form concavities 38 which fit into the corrugations of a wall sheet 22. As clearly shown in Figs. 8, 9 and 10, the outward rise of the wall plate corrugation fits against the flange 37 between the depressions 38 which in turn fit snugly into the inward bends of the wall plate. Bolts 39 hold the contacting portions of the wall plate and flange tightly together, there being some space between the plate and flange at the point where the bolts pass through, so that the resiliency of the plate may be utilized to maintain the plate and flange tightly pressed against each other.

To the lower portion of each upright 35 there is attached a plate 40, which is held in position by welding or riveting, as by bolts, as shown in Fig. 10. The edge of strip 40 extends beyond flange 37 to form a channel with the other flange 41 of the upright. The lower sash 42 of the window slides in this channel. The upper sash 43 is hinged to the lower sash by hinges 44, and may be secured against flanges 41 by a latch 45 mounted upon plate 36, as shown in Figs. 6 and 12.

Below the window the uprights are united by a filler plate 46 which has an upper flange 47 upon which the window fits. Shedding of water is insured by downwardly extending flanges 48 and 49

on the lower and upper sash respectively. When desired, the upper sash may be swung inward and held at the desired angle by fitting over a peg on the sash a chosen notch in the underside of a member 50 pivoted to the upright 35.

It will be seen that I have devised a way of joining the corrugated wall plates to the roof plates and to the uprights which is simple, easy of construction, easy to assemble and provides tight joints. The construction has been described in particular in connection with its utilization in a brooder house or laying house. It is especially desirable in a brooder house to have easily assembled tight joints which will remain tight in use and thus minimize irregular openings or leakages and thus permit accurate control of the ventilation. However, it will be readily seen that some features of the invention may be utilized in making buildings for other purposes, such as grain bins, hog houses, etc., in fact wherever connections, of the character described, to corrugated wall plates are desired.

As previously explained, the joint between the side and roof plates is readily assembled even by unskilled workmen. Where the wall is to be curved, the corrugated plate is rolled to the desired curve. The flange is preferably integral, as this not only insures the maximum results in holding the plate to the desired curve, but also prevents any gaping joint at any point between the flange and body portion of the plate, as well as assisting in holding the flange uniformly at the desired angle to the plate. By having the flange accurately positioned at the desired angle, it assists the workman in ascertaining at once whether or not the peak end of the roof plate is sufficiently elevated. It will be readily understood that, with a curved building wall, the peak of the roof should be at the proper elevation to make the roof plates fit properly, and with the guiding flange even an unskilled workman can check the proper elevation of the peak by aligning it with the flange, or by observing the fit of the sheet upon the flange. As will be readily understood from Figs. 1, 2 and 3, the upper ends of the roof plates are also secured in proper relation at the peak of the roof, and when thus assembled and secured to the wall plates, they insure the upper ends of the wall plates assuming and retaining their proper relative positions so as to hold the building firmly in shape.

The joint between the corrugated wall plates and the flanges 37 is especially important. If the flanges were left flat, obviously each corrugation in the wall plate would provide a channel between the plate and the flange. The end of the plate cannot be fitted against the middle or body section 51 of the Z shaped upright tightly enough to insure a good joint in ordinary commercial practice, even though it might be theoretically possible. If the flange 37 were merely corrugated at the edge by bending successive portions of the edge in opposite directions, the wall plate could not be fitted into the corrugations tightly, since the edge of the side wall, if lapped over the flange, would extend to where the flange meets the upright along a straight line, and the plate must lie entirely on one side of that line. The illustrated construction enables the flange depressions to fit snugly into the corrugations of the plate, and at the same time makes it possible to utilize the natural resiliency of the metal to keep the joint tight. It is essential for this result that the flange have parallel portions in a plane with the straight line where the flange meets the body of the beam,

against which portions the peaks of the wall corrugations may fit, and depressions between said portions fitting into the hollows of the wall corrugations. Providing the bolt holes in the flange in said depressions enables the utilization of the resiliency of the metal to maintain a tight joint.

In the embodiment shown in detail, the uprights constitute a window frame, but obviously the same connection could be made with a door frame, and while the connection of the plate is shown to the flange of a Z shaped upright, and that construction has advantages in forming a window frame of the type shown, a similar joint might be made with the flange of a U beam, a T beam or an I beam, for example.

One embodiment of the invention having been described in detail, and the way it operates having been stated, it will be readily understood that various changes may be made in the construction, within the scope of the appended claims, while retaining some of the advantages of the invention.

What I claim is:

1. In a building, an upright beam constituting part of the frame for an opening and having a body portion with a face substantially perpendicular to the wall of the building and a flange joining said face along a straight line, and a corrugated wall plate having its corrugations running horizontally, its edge juxtaposed to said face and the crests of its corrugations on one side lying against the flange, the flange having depressions in its free edge fitting into the corrugations of the wall plate.

2. In a building, an upright beam constituting part of the frame for an opening and having a body portion with a face substantially perpendicular to the wall of the building and a flange joining said face along a straight line, and a corrugated wall plate having its corrugations running horizontally, its edge juxtaposed to said face and the crests of its corrugations on one side lying against the flange, the flange having depressions in its free edge fitting into the corrugations of the wall plate and fasteners drawing the crests of the corrugations on the other side of the plate towards the flange.

3. In a brooder house, two spaced parallel uprights, Z shaped in cross section, having their body portions substantially perpendicular with the building wall and their flanges substantially parallel with the wall, the flanges which project towards each other forming parts of channels for a window, and corrugated wall plates beside the window with their corrugations running horizontally, their edges juxtaposed to the body portion of the adjacent upright, the crests of the corrugations lying against the flange of the upright that extends away from the window opening, the edge of the flange having depressions fitting into the corrugations and fasteners holding the plates against the flange.

4. A brooder house in accordance with claim 3 and comprising strips attached to the flanges extending away from the window opening, said strips extending towards the window opening beyond the flanges to which they are attached and parallel with the other flanges of the uprights to form channels for receiving the window.

5. A brooder house in accordance with claim 3 and comprising a filler strip between the body portions of the uprights and provided with an upper edge upon which the lower edge of the window sash may rest, and a window sash between said body portions and resting upon said upper edge and having the outer side of the sash

extending lower than the inner side of said edge, to shed water.

6. A brooder house in accordance with claim 3 and having a window between the body portions of the uprights composed of an upper and lower sash hinged together on the inside, and the outer side of the bottom of the upper sash extending below the inner side of the top of the lower sash, to shed water and plates attached to the same flanges as the corrugated sheets and extending on the other side of the body portions to form channels with the other flanges of the

uprights in which the lower sash is vertically slidable.

7. A brooder house in accordance with claim 3 and comprising a filler plate between the upper ends of the uprights and having an outwardly and downwardly extending flange on its upper edge, a sloping roof extending downward and outward over the wall, a flange on the upper edge of the wall plate extending outward and downward parallel with the roof and in line with the flange on the filling plate, and means securing the roof to the last said flange.

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