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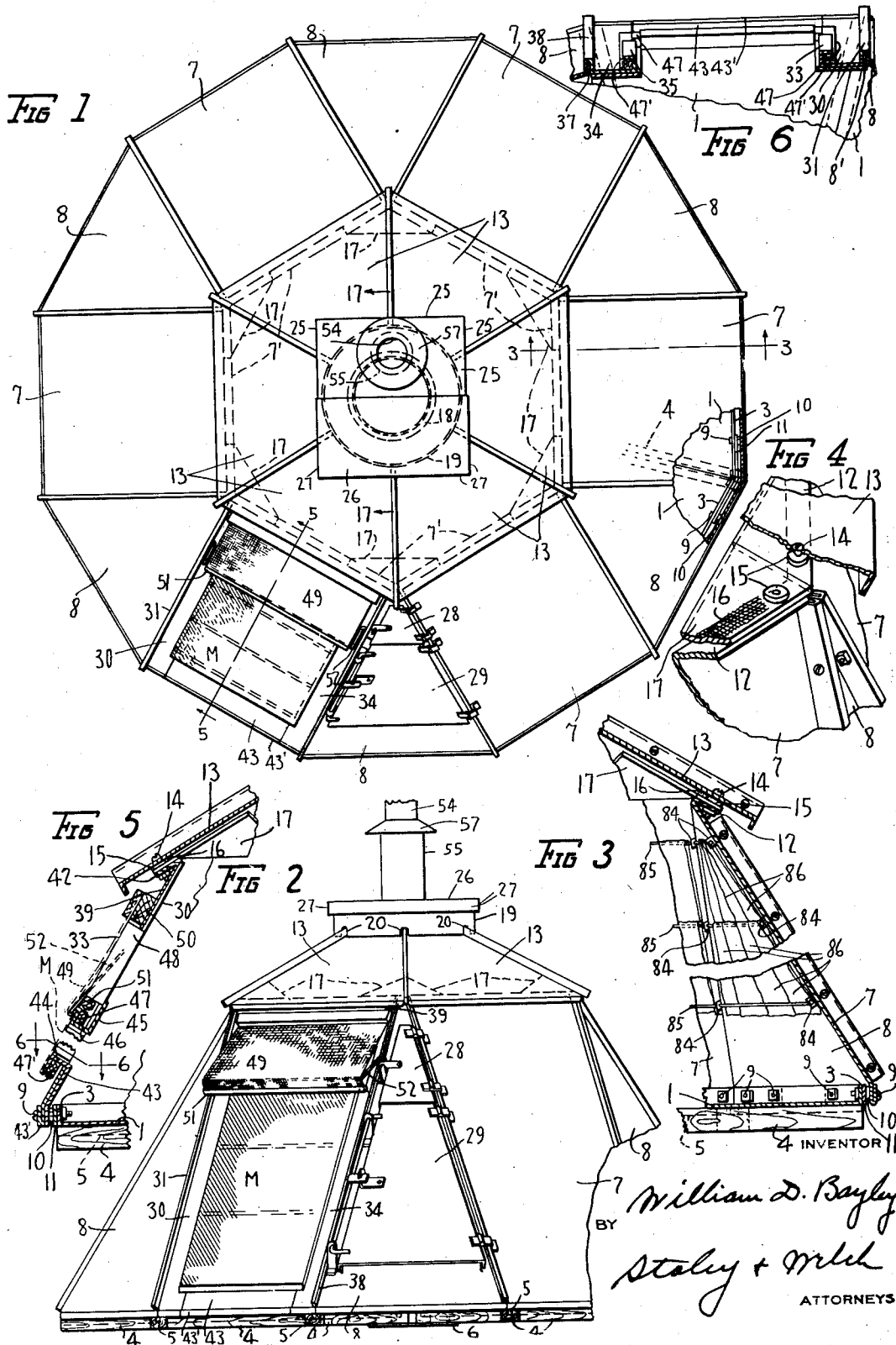
W. D. BAYLEY

1,924,480

HOUSE FOR BROODING

Filed June 17, 1929

3 Sheets-Sheet 1



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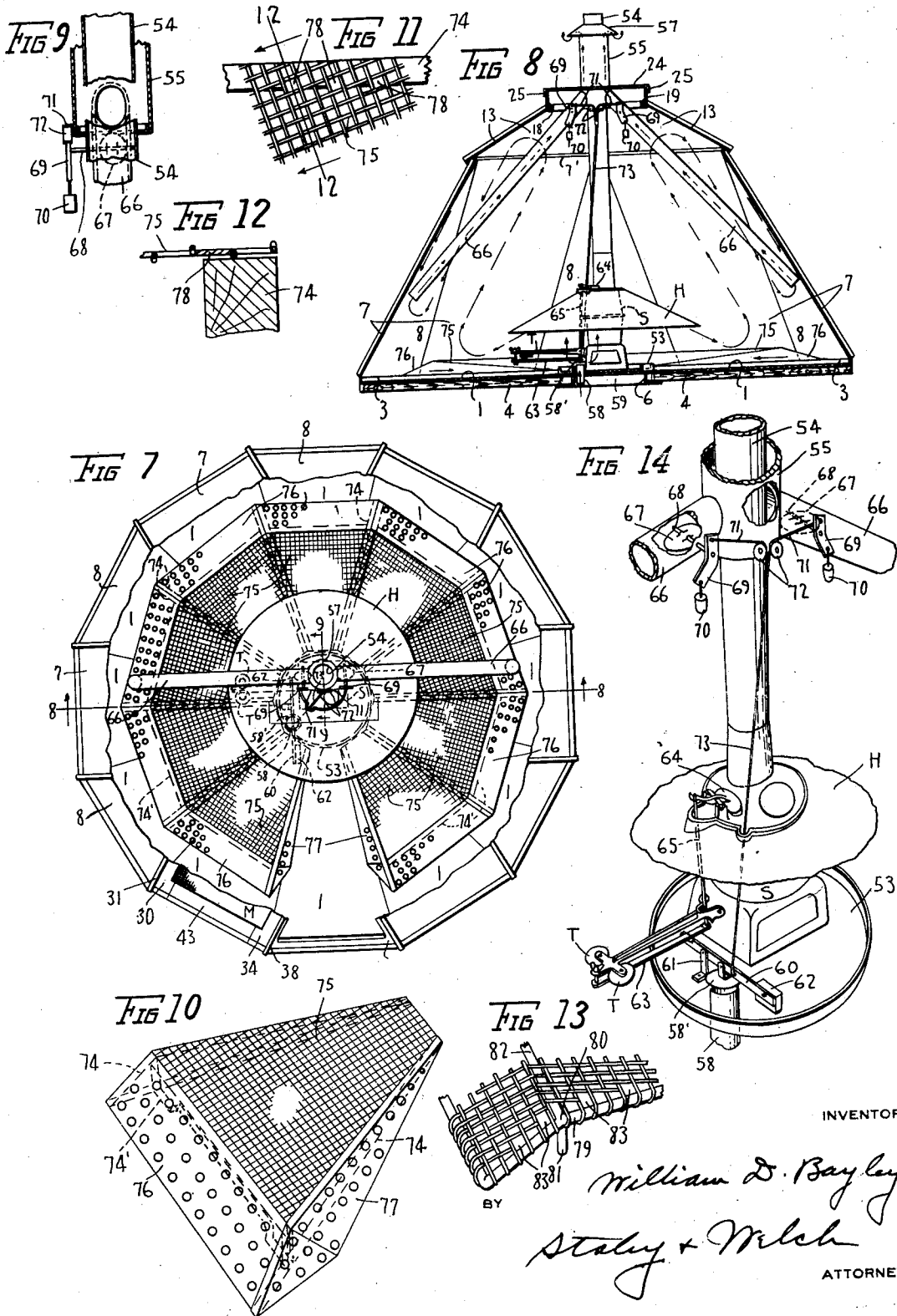
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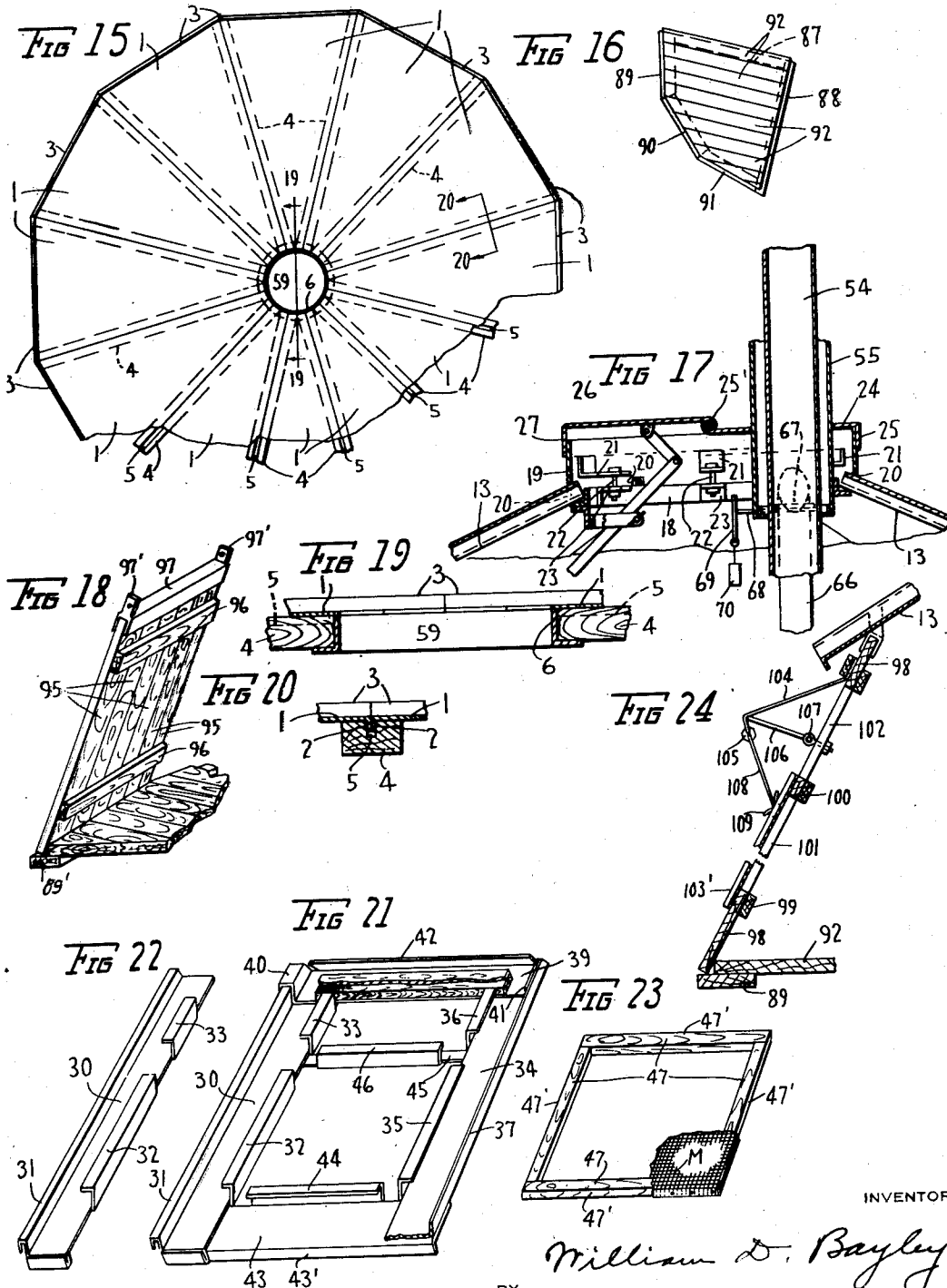
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3 Sheets-Sheet 3



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1,924,480

HOUSE FOR BROODING

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Application June 17, 1929. Serial No. 371,372

11 Claims. (Cl. 119—21)

This invention relates to improvements in houses constructed principally of sheet metal adapted for the rearing of chicks and young animals.

One of the objects of the invention is to provide a sheet metal house of a knock-down character, the design of which permits of economy in manufacture and ease of assembling.

Another object and advantage is the provision of a house so designed that the maximum of space is enclosed, and wherein a great degree of structural strength is obtained with a minimum of material.

A further object is the employment of a construction wherein the outlines of the floor, wall and roof are of regular polygonal form, the outline of the polygonal roof having half as many sides as the floor polygon, for the purpose of economy in use of material.

Another object is to provide improved means for ventilating the structure.

Another object of the invention is to provide means for protecting the inhabitants of the structure from floor drafts.

Another object of the invention is to provide means for disposing of moisture due to condensation on the roof sheets and side walls.

Another object of the invention is to provide improved means for insulating the inner walls of the structure.

In the accompanying drawings:

Fig. 1 is a top plan view of a sheet metal brooder house embodying my improvements.

Fig. 2 is a front elevation of the same in reduced scale.

Fig. 3 is a fragmentary sectional view on a reduced scale taken on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary perspective view illustrating a preferred constructional detail.

Fig. 5 is a sectional view on the line 5—5 of Fig. 1.

Fig. 6 is a horizontal section on the line 6—6 of Fig. 5.

Fig. 7 is a plan view in reduced scale with the roof removed and a portion of the walls broken away to show the interior of the house.

Fig. 8 is a vertical section in the same scale as Fig. 7, and on the line 8—8 of Fig. 7.

Fig. 9 is an enlarged vertical section on the line 9—9 of Fig. 7.

Fig. 10 is an enlarged perspective view of one of the platforms.

Fig. 11 is an enlarged fragmentary plan view of a portion of one of the platforms.

Fig. 12 is an enlarged section on the line 12—12 of Fig. 11.

Fig. 13 is a detail in perspective of a portion of a modified form of platform.

Fig. 14 is an enlarged perspective view of the heating stove and a portion of the ventilating devices.

Fig. 15 is a plan view, on the same scale as Fig. 7, of the floor sections in the preferred form.

Fig. 16 is a plan view, in greatly reduced scale, showing a modified form of floor construction.

Fig. 17 is an enlarged section on the line 17—17 of Fig. 1.

Fig. 18 is a perspective view of a modified form of wall construction.

Fig. 19 is an enlarged section on the line 19—19 of Fig. 15.

Fig. 20 is an enlarged section on the line 20—20 of Fig. 15.

Figs. 21, 22 and 23 are views in perspective of details of wall construction.

Fig. 24 is a vertical section of a modified form of window construction, the view being taken on a line corresponding to 5—5 of Fig. 1.

Referring to the drawings, it will be noticed that the house is polygon-sided, affording in a measure, the advantages of a circular house, yet retaining certain other advantages incidental to the polygon-sided house construction and obviating some of the disadvantages of circular house construction. In a polygon-sided house, as here shown, sharp corners, which are objectionable as being difficult to clean and also form places for crowding are eliminated, while a large area of floor space is obtainable with a given quantity of wall material. Further, since it is the practice to heat such houses by artificial means, the preferred source of heat being a brooder stove provided with a canopy located centrally in the house, a smaller stove may be employed than would be necessary in a square house or house with sharp corners.

The floor consists of a plurality of metal sheets 1 of triangular form with the apexes removed to provide a circular central opening. The adjacent edges of the sheets are down-turned as shown at 2 in Fig. 20, while the outer edges or bases are upturned as indicated at 3 in Figs. 3 and 5. The floor sections 1 are supported from the ground or other place by radially disposed battens 4 having a longitudinal groove 5 in which the complementary down-turned edges 2 are placed, and if desired, the sections may be nailed or secured in any manner to the battens 4. The inner ends of the battens 4 rest on the horizontal leg of a metallic ring 6 of angle cross-section which encloses the central opening.

The wall members of the house are supported by and secured to the floor sections. A plurality of rectangular side wall members 7 and a plurality of triangular wall members 8 are employed spaced alternately. Each side wall member has its lower edge bent to lie in a vertical plane and folded back upon itself, and the bent folded edge is secured to the upturned edge 3 of an adjacent floor member (Fig. 3) by bolts 9, there being however means interposed in the nature of washers 10 which permit a spaced apart relation to exist between the walls and floor sections for the purpose of allowing a drainage space for the condensed moisture which collects on the inside surfaces. The floor and wall section joints are necessarily in alignment one with the other and are strengthened by the addition of a flat metallic bar 11, Fig. 1, through which the bolts 9 pass at these joints.

There is a definite purpose in mind as to the employment of alternate rectangular and triangular sheets for the wall sections. The triangular wall sheets 8, the floor sections 1 and the roof sheets to be described later are of such dimensions as to permit the production of two similar triangular sheets from one rectangular sheet, with a minimum waste of material. It is further preferable that the rectangular sheets which go to make up the wall members 7 be used in their entirety as purchased, the waste being limited to the mere notching at corners to facilitate the bending at the edges. All of the side wall sheets slope inwardly to enclose the greatest amount of useful house space with the least given quantity of material. The angle of slope of the side wall sheets is dependent on two factors, viz., the short diameter of the floor area and the length of the wall sheets with the result that the upper ends of the rectangular wall sections 7 unite to form a polygon-sided opening indicated by dotted lines 7', 7' in Fig. 1 while the wall sheets 8 by reason of their triangular form are adapted to fit into and close up the openings remaining between the rectangular wall sheets. The wall sheets are connected one to another by any one of the numerous methods known to those skilled in the art. The upper edges of the rectangular wall sheets 7 are bent to form flanges 12 (Figs. 3 and 4) and to these flanges the roof members are secured.

The roof members 13 are trapezoidal in form and are joined to the side wall sections by means similar to the connection of the wall members to the floor, there being bolts 14 passing through the roof members 13 and through the out-turned edge 12 of each wall sheet 7. Here also washers 15 are used to provide a space between the roof sheets and the edges 12 to permit the drainage of any condensed moisture, and, if desired, a fabric or cloth filling 16 may be laid between the washers 15 to prevent drafts. To provide additional strength for the coincidental joints of the roof sections and the rectangular wall sections, a gusset-like connector plate 17 is interposed therebetween (Fig. 4).

The roof members 13 are connected to each other preferably in the same manner as the wall members and are trimmed at their upper ends to conform to a metallic ring 18 (Fig. 17). The opening thus formed is covered and protected by means now to be described, which means are somewhat similar to means described in Letters Patent No. 1,848,690, dated March 8th, 1932.

A tubular member 19, notched at 20 to receive the roof seams or joints, (Figs. 2 and 17), is ver-

tically placed, concentrically, at the upper ends of the roof sections 13 and has on its inner surface a series of radially extending brackets 21 secured thereto by welding or other means, at the inner ends of which bolts 22 are passed through to angle brackets 23 secured by any means to the ring 18 with the result that the ring 18 and tubular member 19 are clamped to the roof members 13. A cap 24 having a downturned flange 25 is secured to the tubular member 19 and covers approximately one half the opening therethrough, and at its edge coinciding with the center of the house, a hinge pin 25' is fixed on which is pivotally mounted a similar door 26 having downturned edges 27 adapted to close the remaining half of the opening, or to be raised to permit ventilation or entrance of sunlight.

Entrance to the house is afforded through a door aperture in one of the triangular sheets 8 (Fig. 2) over which doors 28 and 29 are hingedly connected with any suitable means of latching the same. It is preferable to place the house so that the doors 28 and 29 and also the flat ventilating member 26 have a southerly exposure, so that in mild weather the doors may be opened to furnish entrance for direct sunlight.

It is desirable also to promote the growth of the chicks by the admission of the ultra-violet rays of the sun, but with the exclusion of injurious drafts. To this end, windows, one of which is shown in detail, protected by any suitable material that allows free passage of ultra-violet rays, are provided and to secure the greatest possible exposure a rectangular sheet 7 adjacent the doors 28 and 29 is omitted and in its place a suitable framework is employed which is best illustrated in Fig. 21. A narrow strip 30 of sheet metal of the same length of the wall sheets is formed as shown in Fig. 22 in which it will be seen that one edge is given an out-turned U-bend 31, while at the other edge two angular out-turned bends 32 and 33 are formed. A similar strip 34 is provided having similar out-turned angular bends 35 and 36 and an out-turned edge 37 adapted to be received into an out-turned U-bend 38 of an adjacent triangular sheet, in this case the triangular sheet 8 in which the door aperture is cut. The U-bend 31 straddles the out-turned edge 8' of another adjacent triangular section 8 (Fig. 6). A narrow strip 39 having at one end a U-bend 40 and an out-turned edge 41 is placed transversely across the upper ends of the strips 30 and 34, the U-bend 40 being placed over the U-bend 31, while the up-turned edge 41 is placed alongside the up-turned edge 37 of the strip 34. The upper edge of the strip 39 is bent outwardly as at 42 (Figs. 5 and 21) which corresponds to the similar bends 12 of the rectangular wall sheets 7 and is for the same purpose, this strip being connected to the roof in the same manner. A strip 43 is secured across the lower ends of the strips 30 and 34 and is secured underneath these strips. It will be noticed that the strip 39 is placed over while the strip 43 is placed under the strips 30 and 34, this being for the purpose of affording water-shed. The lower edge 43' of the strip 43 is secured to the floor sections in the same manner as other wall sections are secured, while the upper edge is bent, as at 44, to the angular shape as shown.

At a suitable height a strip 45 which defines the upper extremity of the sunlight opening is placed across and secured in any manner to the strips 30 and 34, and preferably beneath them. The lower edge of this strip is bent as at 46,

similar to the bends on the strips 30, 34 and 43, and when all of the strips 30, 34, 39, 43 and 45 are assembled, they appear as shown in Fig. 21. In the troughs formed by the angular bends 32, 35, 44 and 46 with their respective sheets, strips of wood 47 (Fig. 23) are fitted. To the edges 47' suitable material M which allows the passage of the ultra-violet rays of the sun is tacked.

The opening 48 above the strip 45 is covered by an awning 49 of cloth such as canvas, the upper edge of which is tacked to a wooden strip 50, while at the lower edge a wooden batten 51 is secured. By rolling the canvas around the batten, openings of varying sizes are obtained, or to obtain a partially open condition as for ventilation in rainy weather the canvas may be stretched over a U-shaped rod 53 whose ends are inserted in openings (not shown) in the joints between the wall sections as illustrated in Fig. 2. When desired the entire opening may be closed by drawing the U-shaped rod downwardly, carrying with it a fold of the canvas, so that it rests on and over the upper edge of the sunlight window and so affords a water-shed. The canvas awning 49 being tacked to the wooden strip 50 which is of a height equal to the out-standing bent portions 33 and 36 lies flatly on those portions, a wooden batten 51 being placed in the space between the lower ends of the portions 33 and 36, and the upper strip 47 (Fig. 5). A bent wire awning stretcher 52 is preferably employed to hold the awning away from the opening 48.

The house is preferably heated by a brooder stove and hover of any well-known type as indicated at S and H respectively. The stove S is located in the approximate center of the house, and is preferably set in a comparatively large pan 53 with up-turned edges in which sand may be distributed as a protection against embers, the pan also covering the central opening in the floor. Air for combustion is taken from the interior of the house, while the smoke and gases rise through the flue 54 to the outside. The flue 54 passes through a pipe 55, of large diameter and having a closed bottom as at 56 (Figs. 9 and 17). The pipe 55 is secured in the cap 24 and extends upwardly a suitable distance and terminates in a rain-hood 57.

The desired heat is controlled in the house by means of well-known thermostatic devices incorporated with the stove, and connected therewith and operating in unison therewith are certain novel ventilating devices, the purpose of which is to provide means for the admission of fresh air and for the discharge of foul air in approximately the same proportions and in a continuous manner, the description of which will now be taken up.

A quantity of fresh air is permitted to enter the house through a duct 58 located to deliver the fresh air below the hover and preferably adjacent the stove S. In the present instance this duct 58 passes through the pan 53 and draws air from the central opening 59 in the floor and the volume of entering air is under the control of a damper 58' operated by the thermostatic devices. A beam 60 to one end of which the damper is pivotally connected is pivotally mounted on a standard 61 secured to the pan 53 and on the opposite end is fixed a balancing weight 62. The beam is tilted in one direction to open the damper by the action of the movable element 63 of the thermostat and in opposite directions to close the damper by the action of the weight. The movable element 63 is connected to a second damper 64

which controls the check draft opening of the stove, the connection being indicated at 65.

Secured to the lower end of the pipe 55 and on opposite sides a plurality of out-take foul air flues 66 are secured (Figs. 7, 8 and 14). These pipes extend radially and downwardly, terminating at points closely adjacent the side walls in the lower part of the house. Being connected to the pipe 55 an upward current of air through them will be established, and to control this flow each pipe has a butterfly damper 67 fixed on a shaft 68 (Fig. 14). These dampers are interconnected with the fresh air damper 58' and of course with the thermostatic elements T by the mechanism previously described. On the shafts 68 are fixed double armed levers 69, on one end of which is hung a balancing weight 70, and to the upper end a cord or wire 71 is attached which passes over pulleys 72 and unites in a common cord or wire 73 which is secured to the damper end of the beam 61.

By having the cold air inlet beneath the canopy as described, flow of cold air across the floor toward the stove is lessened, consequently minimizing drafts at the floor line.

Further, to avoid the subjection of the chicks to the cold air drafts at the floor line, and also to provide a cold air zone adjacent the walls of the structure to prevent objectionable crowding of the chicks at this point, I provide a plurality of elevated platforms. These platforms extend about around the stove in an approximately circular fashion, reaching from the pan 53 to a point beyond the periphery of the hover H, but removed from the side walls, and also increase in height as the distance from the center increases. The preferred method of constructing these platforms is shown best in Fig. 7 and Fig. 16.

Two side wooden frame members 74 are connected together so that when installed they will lie in radial planes. These frame members are connected together by an arched cross-piece 74' as indicated in dotted lines in Fig. 10 and have their upper edges inclined upwardly and outwardly. A metallic woven wire screen member 75 of an approximate trapezoidal form is tacked to the upper edges of the frame members which are edgewise. At the outer end of each frame a perforated sheet metal strip 76 is secured to form a ramp or incline up which the chicks may walk and which also prevents the chicks from straying underneath the platform, the perforations allowing free passage of the colder air currents from the walls inwardly toward the stove. The use of the foraminous woven-wire material not only allows free circulation of air but also allows the droppings to fall through to the floor and prevents contamination in that way.

By this arrangement a brooding space is provided which is elevated above the floor and consequently not subjected to floor drafts, which elevated space is surrounded by a zone which is maintained cool enough by floor drafts and its proximity to the outer walls to repel the chicks, thus avoiding objectionable crowding of the chicks against the side walls.

In order to provide a passage-way to permit access to the stove for the attendant, it is preferable to omit one sector of the plurality of elevated platforms (Fig. 7) in which case those sides of the platforms which are adjacent the passage-way are each fitted with similar perforated ramps 77.

In Figs. 11 and 12 enlarged views are shown in explanation of particular points of construction of the platform sectors. Since the frames 74 are

radially disposed, the meshes of the foraminous material would ordinarily intersect the radially disposed frames at places with very acute angles in which the claws or toes of the chicks would catch. To obviate this detrimental condition, all meshes having this tendency are plugged or closed, preferably by a solder plug 78 (Fig. 12).

In Fig. 13 a modification of the manner in which the platforms may be constructed is shown in which a portion only of a platform is illustrated. A rod 79 is bent to an approximately trapezoidal form and given an upward inclination to the points 80, one of which is shown. To the side portions of the frames thus formed supporting struts 81 are attached by welding or other means and a cross rod 82 is also attached to the frame sides for strengthening purposes. The foraminous material is stretched over the frame thus formed and secured by bending the wires forming the mesh around the rod 79 and welding the same at variously spaced points. In those meshes where the intersection of the wires and the rod 79 will result in the formation of the detrimental acute angle previously described, the wires are cut away as indicated at 83.

Referring to Fig. 3, a method is shown whereby heat conservation is effected by the employment of old newspapers or other material. A series of perforated metallic clips 84 project laterally from the wall joints at different heights, and through those at the same approximate level wires 85 are strung through the perforations, the paper 86 after being folded being hung over a wire and having the lower end placed back of the next lower wire.

A modification in the floor construction, having merit in certain localities is shown in Fig. 16 in which one section of a floor of the modified type is shown. A frame is constructed of a batten 87 and a batten 88 which are secured together at right angles to one another, and have their free ends joined by battens 89, 90 and 91, each of which is in an angular relation one to another as chords of arcs of equal length. To this frame boards 92 are secured in such manner that one board extends beyond the outer edge of the batten 87, and all of the other battens project beyond the ends of the boards to an amount equal to the amount of overlap over the batten 87, so that a rabbet is formed on two sides, the rabbet on the radial line along the batten 88 receiving the projecting edge of a board of a similar floor section, and when four such sections are assembled together a rabbet will continue entirely around the polygonal outline, the weight of the remainder of the house being taken on the chordal battens 89, 90 and 91. By securing each of the four floor sections to each other, and securing the wall members to the battens 89, 90 and 91, the floor sections act as a stay to the house, and give rigidity and strength to the house, while the battens 89, 90, 91 etc. serve to elevate the floor boards above the ground.

There is shown in Fig. 18 a modified wall construction consisting of a rectangular wall panel of wood, composed of boards 95 and battens 96. The lower edge is secured by nailing or otherwise to a chordal batten 89' of a floor section, while a channel member 97 is fitted over the upper edge. At each end of this channel member are up-turned perforated integral tabs 97' to facilitate juncture with the roof joints.

In Fig. 24 a modified form of a rectangular wall panel of wood is shown in which a window and awning-covered opening is located. Boards 98 are secured together by nailing to them battens 99

and 100, with the intermediate boards cut away to form openings 101 and 102. Over the opening 101 is tacked a piece of material which permits the passage of the ultra-violet rays of the sun, the edges being bound by thin wooden strips 103', one of which is shown. The opening 102 is protected by a cloth awning 104, depending from the upper edge of this opening, which awning may be rolled around the rod 105 to afford a direct opening, or which may be stretched over the U-shaped rod 106, the ends of which are pivotally mounted in eye-bolts 107. It may be fastened in any position by means of the cords 108 being wound around the cleats 109.

Having thus described my invention, I claim:

1. In a structure of the character described, a roof of polygonal shape, a series of rectangular side wall sections, one for each of a majority of the sides of the roof polygon and connected therewith, and a series of triangular side wall sections interposed between the said rectangular side wall sections and connected therewith.

2. In a structure of the character described, a sloping roof of polygonal shape about its edge, a series of sloping rectangular-shaped side wall sections, one for each of a majority of the sides of the roof polygon and connected therewith, and sloping triangular-shaped side wall sections interposed between said rectangular side wall sections and connected therewith.

3. In a structure of the character described, a polygonal-shaped roof formed of a series of triangular-shaped sections joined together, a rectangular-shaped side wall section for each of a majority of said roof sections and joined thereto, and a series of triangular shaped side wall sections interposed between the rectangular-shaped sections and joined thereto.

4. In a structure of the character described, a sloping polygonal-shaped roof formed of a series of triangular-shaped sections joined together, a sloping rectangular-shaped side wall section for each of a majority of said roof sections and joined thereto, and a series of sloping triangular shaped side wall sections interposed between the rectangular-shaped sections and joined thereto.

5. In a structure of the character described, a floor of polygonal shape, a roof of less area than the floor also of polygonal shape, the sides of the roof polygon being one-half the number of sides of the floor polygon, a series of rectangular side wall sections fitted to a majority of the sides of the roof polygon and to the corresponding sides of the floor polygon, and triangular shaped side wall sections fitted to the other sides of the floor polygon and joined to adjacent rectangular side wall sections.

6. In a structure of the character described, a floor of polygonal form, a roof of less area than the floor also of polygonal form, the sides of the polygon of which are positioned to correspond with alternate sides of the floor polygon, side wall sections connecting said sides of the roof and floor polygons, and additional side wall sections joined to the other sides of the floor polygon and tapered to fit the spaces between the first mentioned side wall sections.

7. In a structure of the character described, a roof formed of a series of sloping sections each shaped like an isosceles triangle with its apex removed on the arc of a circle to form a circular opening at the apex of the roof, a supporting ring bounding the walls of said opening, a floor of larger area than the roof and having a plurality of straight sides, and side walls consist-

ing of a plurality of rectangular sections and a plurality of interposed triangular sections connected with each other and with the roof and floor.

- 5 8. In a structure of the character described, a central heater, a series of sector-shaped platforms arranged in juxtaposition about said heater with their outer ends spaced from the wall of said structure, each platform consisting of an inclined frame having converged sides, an inclined ramp at the outer end of said frame leading toward the wall of the structure, and a reticulated covering of wire mesh for said frame and ramp.
- 10 9. In a structure of the character described, a central ring, radially-arranged floor battens supported at their inner ends by said ring, triangular shaped sheet metal sections supported by said battens, adjacent edges of said sheet metal sections being downturned and said battens being grooved to receive said downturned edges, the outer edges of said sheet metal floor sections being upturned, sheet metal side walls, and means for securing the lower edges of said side walls to said upturned edges of the floor sections.

10. In a structure of the character described, a central ring, radially-arranged floor battens supported at their inner ends by said ring, triangular shaped sheet metal sections supported by said battens, adjacent edges of said sheet metal sections being downturned and said battens being grooved to receive said downturned edges, the outer edges of said sheet metal floor sections being upturned, sheet metal side walls, means for securing the lower edges of said side walls to said upturned edges of the floor sections, and means interposed at intervals between the side walls and upturned ends of the floor sections to space the same apart.

11. In a structure having sheet metal side walls, a plurality of horizontal wires forming supports at different levels arranged closely adjacent the sheet metal walls but slightly spaced therefrom to permit folded paper to be hung on certain of said wires with the free edges of the paper tucked in between the wires of a lower level and the walls of the house, and means for supporting said wires.

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