C. C. FOUTS.

METAL STRUCTURE.

APPLICATION FILED MAR. 15, 1915.

1,182,082.

Patented May 9, 1916.

2 SHEETS—SHEET 1.

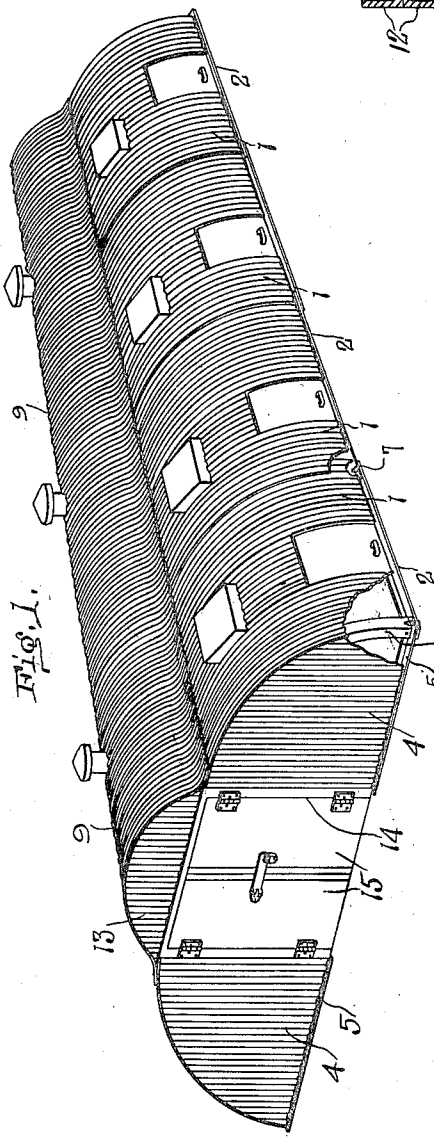


Fig. 1.

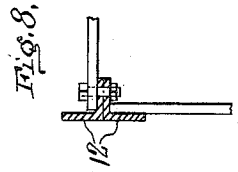


Fig. 3.

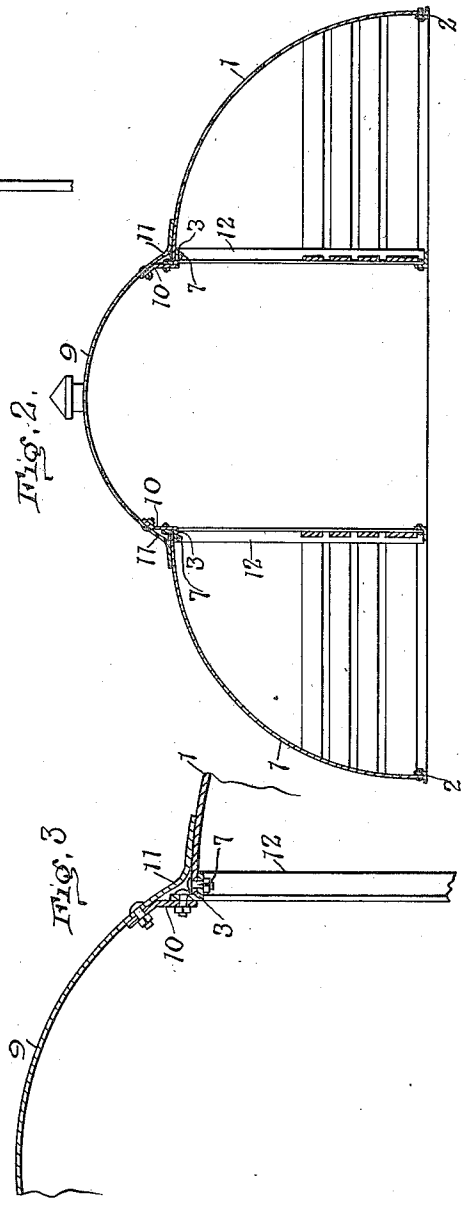


Fig. 2.

Witnesses

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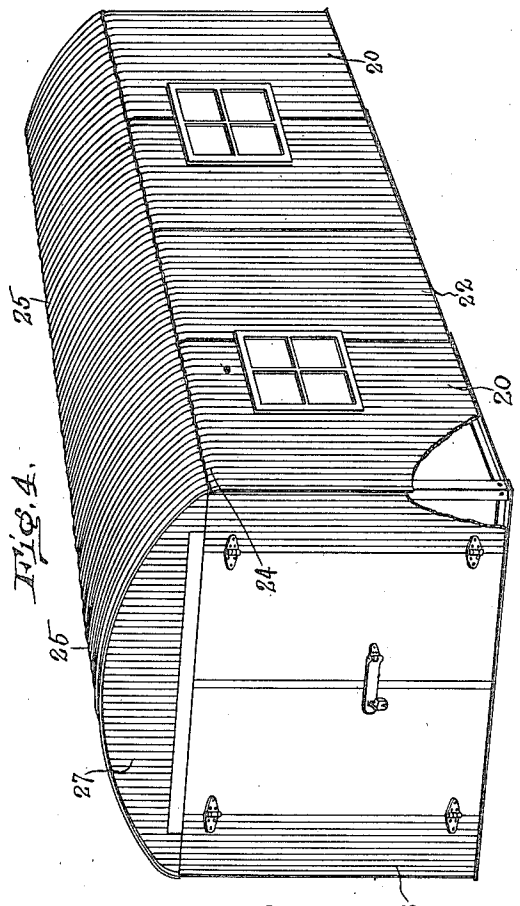


Fig. 4.

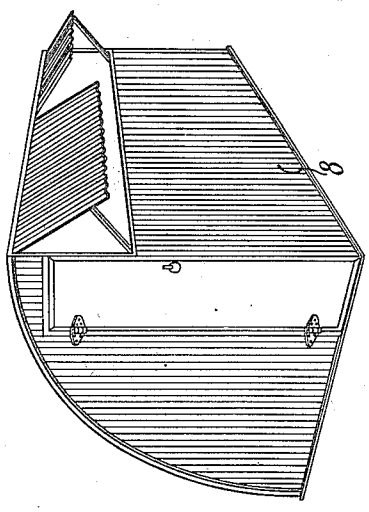


Fig. 7.

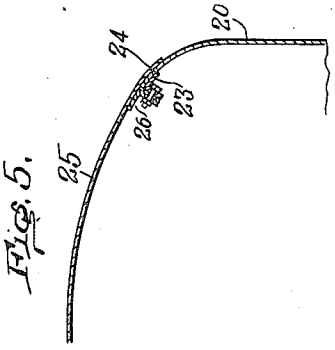


Fig. 5.

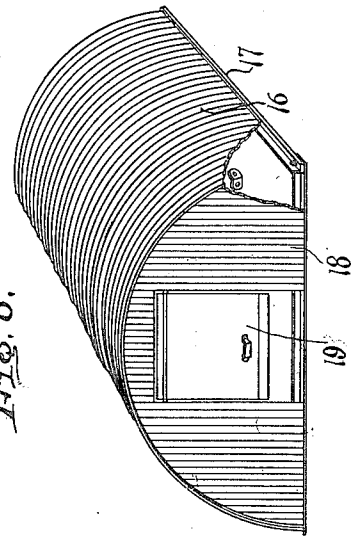


Fig. 6.

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UNITED STATES PATENT OFFICE.

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METAL STRUCTURE.

1,182,082. Specification of Letters Patent. Patented May 9, 1916.

Application filed March 15, 1915. Serial No. 14,334.

To all whom it may concern:

Be it known that I, CALVIN C. FOUTS, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Metal Structures, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to metal structures and more particularly to small houses, such as hog houses, chicken houses, garages and the like, which are usually constructed of a plurality of separable units or sections to permit the structure to be knocked down and shipped to the purchaser and to be assembled by him. Structures of this kind are in common use but they are, for the most part at least, of a heavy, expensive construction and are difficult to assemble.

The object of the present invention is to provide a structure of this kind which will be of a light, inexpensive construction and will, at the same time, be strong and durable; and further, to provide such a structure which can be very easily assembled.

To this end it is a further object of the invention to eliminate as far as possible the use of heavy metal frame work and to utilize the metal sheets themselves to secure the desired rigidity of construction.

In the accompanying drawings, Figure 1 a perspective view of a structure embodying my invention, partly broken away; Fig. 2 is a transverse, sectional view of the same; Fig. 3 is an enlarged, sectional detail of the roof joint of the structure shown in Figs. 1 and 2; Fig. 4 is a perspective view of still another embodiment of the invention; Fig. 5 is a detail view showing the roof joint of the structure of Fig. 4; Fig. 6 is a perspective view of a smaller structure, partially broken away; Fig. 7 is a similar view of another embodiment of the invention; and Fig. 8 is a sectional detail of one of the supporting posts for the interior of the structure of Figs. 1 and 2.

In these drawings I have shown several different structures embodying my invention to illustrate the wide range of structures to which it is applicable. The several structures here illustrated are all built in substantially the same manner and with little or no change in the construction, excepting the difference in the shape of a part of the units in some of the structures. In each instance the units are formed of corrugated sheet metal provided along their ends, that is transversely to the corrugations, with reinforcing bars and having their adjacent edges overlapped to form a weather tight joint between them.

The house shown in Figs. 1 and 2 of the drawings is what is known as a colony house for hogs. The side walls are formed from a plurality of sections or units 1, formed of corrugated sheet metal with the corrugations extending lengthwise thereof, that is, from the ground upwardly. Rigidly secured to each end of each unit and, consequently, extending transversely to the length of the corrugations are stiffening bars 2 and 3 which are preferably in the form of angle bars. The lower angle bar 2 has the lower edge of the sheet riveted or otherwise secured to the vertical flange of the bar and the horizontal flange of the bar rests on the ground and forms a support for the side wall of the house. Preferably, this horizontal flange extends outwardly, as this arrangement assists in preventing the water which runs down the side of the house from entering the house under the edges of the wall. The upper angle bar 3 has the upper edge of the sheet secured to the horizontal flange thereof and has its other flange extending vertically, as shown in Fig. 3, in which position it serves as a support for the edge of the upper roof sheet. The units 1 are curved about an axis extending transversely to their length and are here shown as comprising substantially a fourth part of a circle. The ends of the house are closed by units or sections 4 having their outer edges curved to correspond to the curvature of the units 1. The units 4 are also formed of corrugated sheet metal with the corrugations extending vertically and have their lower edges rigidly secured to angle bars 5 in substantially the same manner that the units 1 are secured to the angle bars 2. The curved edge of each of the sections 4 preferably extends under the edge of the end section 1 and, as here shown, it extends into the groove formed by the end corrugation, thus causing the lateral edge of the unit 1 to extend downward over the upper edge of the unit 4. The adjacent edges of these sections are thus held in their proper relative positions but to stiffen this connection I prefer to provide fastening de-

vices of some kind such, for example, as angle irons having one edge secured to the upper edge of the unit 4 and their other edge extending beneath and adapted to be secured to the adjacent edge of the unit 1. These angle irons may be short and in the form of clips or they may extend for the full length of the unit 4 and thus constitute a stiffening member as well as a fastening device. In the present drawings I have illustrated the angle iron as a curved bar extending for the full length of the curved edge of the unit, as shown at 6. The several units are connected one to the other by causing the adjacent ends of the stiffening bars to overlap to receive fastening devices, such as bolts 7. This is true of the connections between the several units 1 as well as between the units 1 and the end units 4. The thickness of the angle irons is not sufficient to raise the upper bar an appreciable distance above the ground.

It will be noted that that portion of the structure formed by the curved units 1 and the end units 4 can be utilized in various combinations. It can be provided with a front wall 8, as shown in Fig. 7, formed of vertical sections of corrugated metal bound at its top and bottom by reinforcing bars and will thus constitute a structure which, by the provision of suitable doors or other openings, may be utilized as a complete house, either as a colony house for hogs, or as a chicken house or for any other similar purpose. Or two structures similar to that shown in Fig. 7, but omitting the vertical wall 8 could be brought close together and connected at their upper edges and would thus constitute a house similar in shape to that shown in Fig. 6 but of a larger size. In Fig. 1, however, I have shown the two parts as spaced some distance away from each other and have bridged this intervening space by means of an upper roof structure. This roof structure comprises a plurality of units or sections 9, each of which consists of a corrugated sheet of metal bound at its lower edges with stiffening bars 10 and curved about a transverse axis into approximately a semicircular shape. The ends of the sections 9 overlap the upper ends of the sections 1, and, to this end, are here shown as extending beyond the stiffening bars, as shown at 11. The stiffening bars 10 are also shown as angle bars, but the angle is broader than a right angle, as shown in Fig. 3, so that when the lower flange is in a vertical position the upper flange will extend substantially parallel with the lower surface of the unit of which it forms a part. The vertical flange of the angle bar engages the inner edge of and is preferably rigidly secured to the vertical flange of the upper angle bar 3 of the adjacent section 1. That portion 11 of each unit 9 which projects beyond the stiffening bar 10 serves not only to bridge the joint between the two sections but also breaks this joint in such a manner as to give the structure a smoother and more pleasing appearance. Because of the width of the structure it is preferable that it should be supported by a frame of some kind and I have here shown the angle bars 3 of the units 1, along each side of the roof section composed of the units 9, as resting upon posts 12. These posts are here shown as formed of angle irons and preferably each post consists of two angle irons having their adjacent flanges arranged face to face and rigidly connected one to the other so as to give the post a substantially T-shape in cross section. The two oppositely extending flanges of the T are arranged lengthwise of the house and the flanges of the posts thus formed are utilized as supports for the boards or strips by means of which the interior of the house is divided into pens or compartments, as shown in Fig. 8. Preferably, there is a post arranged at the point of connection between each pair of units 1, this serving to arrange the posts a proper distance apart for the construction of the pens with which it is desired to provide the present house.

The ends of the roof structure formed by the units 9 are closed by units 13, only one of which is shown, formed of corrugated metal after the manner of the units 4 but substantially semicircular in shape to conform to the shape of the roof structure. They may be fastened to the ends of the units 9 by angle irons in the same manner that the units 4 are secured to the units 1. The space between the units 4 and beneath the unit 13 may be utilized for doors or may be entirely closed. At that end of the structure which is shown in Fig. 1, this space is provided with a door frame 14 to which are hinged doors 15, these door frames being rigidly secured to the adjacent edges of the respective sections. The structure shown in Fig. 6 corresponds very closely in construction to a single unit 9 of the roof structure shown in Figs. 1 and 2. I have, however, shown the unit of Fig. 6 as provided at its lower edge with right angled angle bars and having the ends of the strips terminating at the bar instead of extending beyond the same, as shown in Fig. 2. This better adapts the structure to rest upon the ground. This structure, as here shown, comprises a single unit 16 having its end curved in substantially semicircular form, bound at its edges by angle bars 17 and closed at its ends by sections or units 18. It will be obvious, however, that if it is desired to lengthen the house additional units could be placed end to end with the unit 16 connected thereto, as above described in connection with the units of Fig. 1. As here shown, the end unit 18

is provided with a door 19, but it is obvious that a door of any suitable kind may be provided.

In Figs. 4 and 5 I have shown the invention as embodied in a garage. This construction differs from that shown in Fig. 1, principally in the shape of the sections and the character of the joint between the roof sections and the side sections. As shown in these figures, the structure comprises a series of side units 20 which are bound at their upper and lower edges by angle irons 22 and 23 and which, instead of being curved for their full length, are straight for the greater portion of their length and have their upper portions only curved, as shown at 24, to form a support for the roof sections. These units 20 are connected in the same manner as the units of the house shown in Fig. 1. The roof structure comprises a series of sections 25 curved for their full length about a radius of such length as to give the desired shape to the roof and each end of each roof unit has secured thereto a bar 26 which is spaced some distance from the end of the section and has its outer flange arranged substantially vertically. Thus, when the roof sections are placed in position the vertical flanges of the angle bars 26 and 23 will engage one with the other and may be rigidly secured together. The vertical flange of the bar 23 will, of course, lift the adjacent portion of the roof unit above the end of the curved portions 24 of the side units, but the overlapping portion of the roof unit is of such a length that its end rests upon the side units and the whole roof structure is of a substantially uniform curvature and is not only water tight but of a pleasing appearance. The ends of the housing are closed by units 27 and 28 which are of substantially the same construction as that already described, differing only in their shape.

It will be apparent that I have provided a unit construction from which houses of this character can be built which is not only very inexpensive to build but requires a relatively small amount of material and is of great strength, the corrugations of the metal serving to stiffen the unit in one direction and the stiffening bars serving to stiffen the same in the other direction. Further, the construction is such that the units can be readily bent or otherwise shaped to give them the desired contour and to adapt them to houses of different shapes and sizes. Further, it will be noted that the corrugations or grooves at the edges of the sections provide an overlapping construction which forms a water-tight joint and that the stiffening bars, when fastened together, not only hold these sections against longitudinal displacement but serve to draw the overlapping portions of the sections snugly together. While I prefer to use full corrugated metal this is desirable only as furnishing additional strength to the units. Satisfactory joints can be made if the units are corrugated or grooved at their lateral edges to provide for the interlocking edges between the adjacent sheets.

While I have shown and described several embodiments of the invention it will be understood that these have been chosen for the purposes of illustration only, and that I do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a metallic structure, a pair of upwardly and inwardly extending side units, the upper horizontal edge of each side unit being reinforced by means of an angle bar, said angle bars having horizontal flanges attached to said side units adjacent said edges and having vertical flanges extending above the plane of said side units, and a roof unit having secured thereto and spaced from its edges angle irons with vertical flanges, said last-mentioned flanges secured to the vertical flanges on the side units to fasten the roof to the side units, said roof having its edges extending beyond the flanges and overlapping the side units.

2. In a metallic structure, the combination, with upwardly and inwardly inclined side units, an angle iron secured to each side unit along its upper horizontal margin, a roof unit having lateral margins overlapping and lying flat against said side units, and an angle iron secured to the roof unit near each of its lateral margins and secured to the adjacent side-unit angle iron.

3. In a metallic structure, a base composed of angle irons, corner angle irons secured thereto, side units secured to the base angle irons, end units secured to the base angle irons, a roof unit having lateral margins overlapping and lying flat against the side units, and angle irons secured to the side units and roof unit near the overlapping portions thereof, said angle irons being secured also to each other.

In testimony whereof, I affix my signature in presence of two witnesses.

CALVIN C. FOUTS.

Witnesses:
H. L. Dell,
B. F. Harwitz.