March 10, 1936. A. F. BECK 2,033,809

METHOD OF PRODUCING GRAVE VAULT HOODS

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Fig. 1.

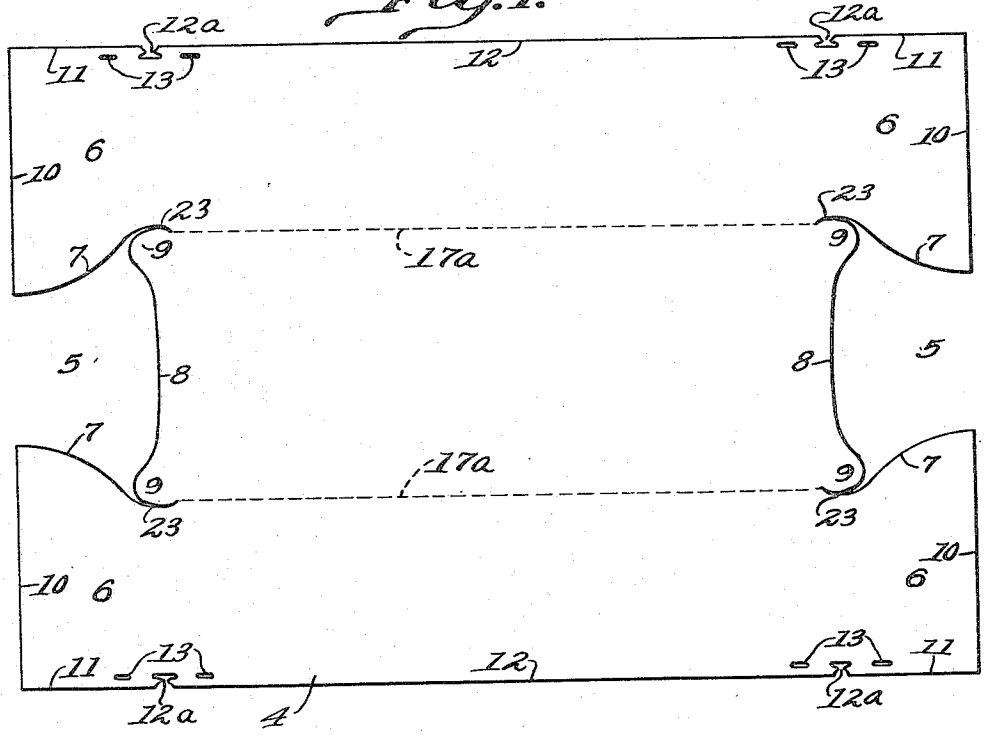

Fig. 2.

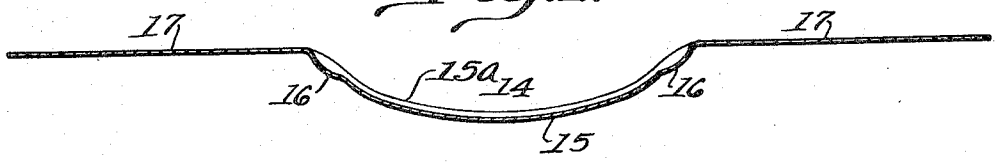

Fig. 4.

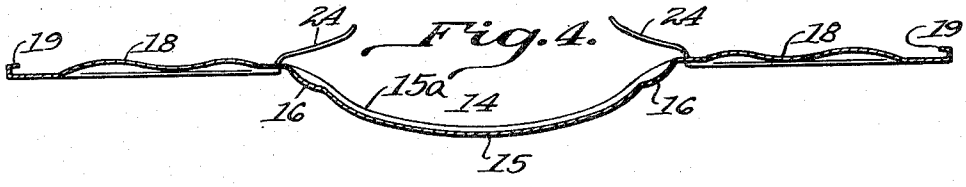

Fig. 5.

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Fig. 3.

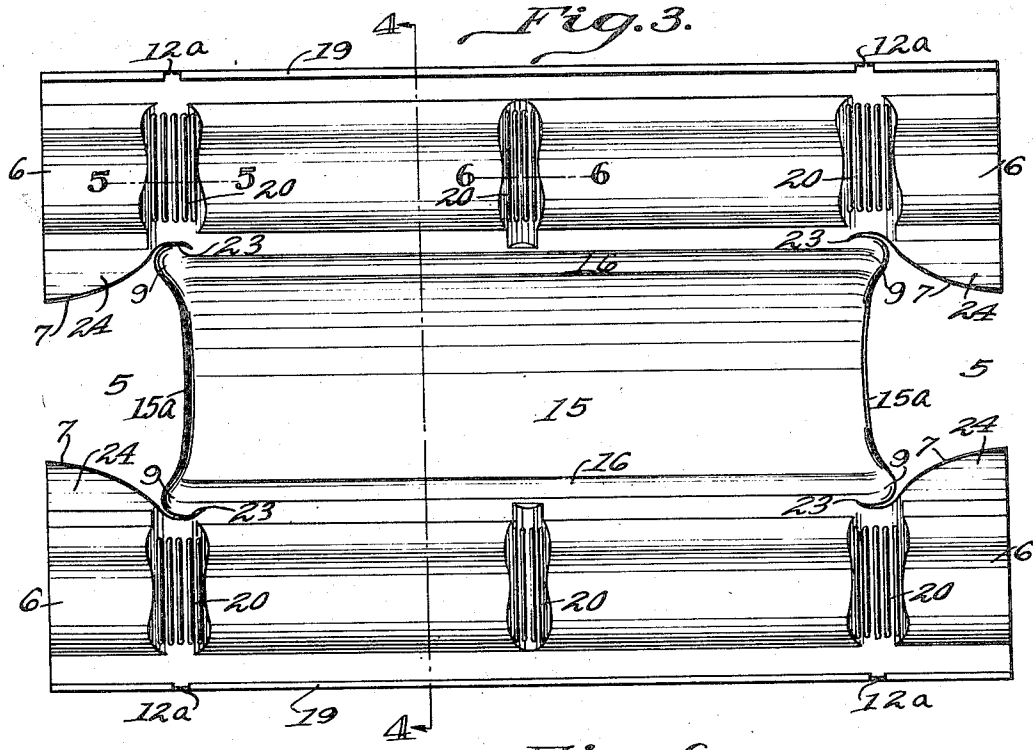
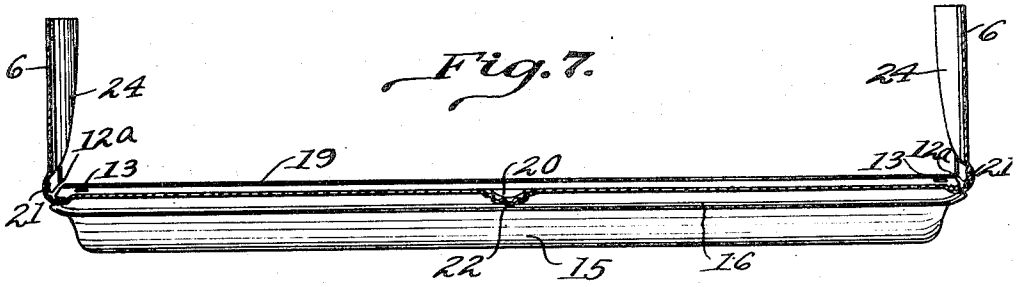


Fig. 6.

Fig. 7.



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METHOD OF PRODUCING GRAVE VAULT HOODS

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Fig. 8.

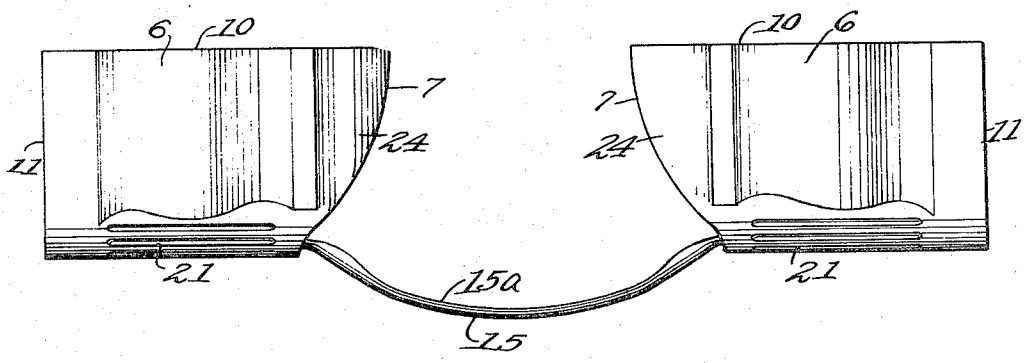
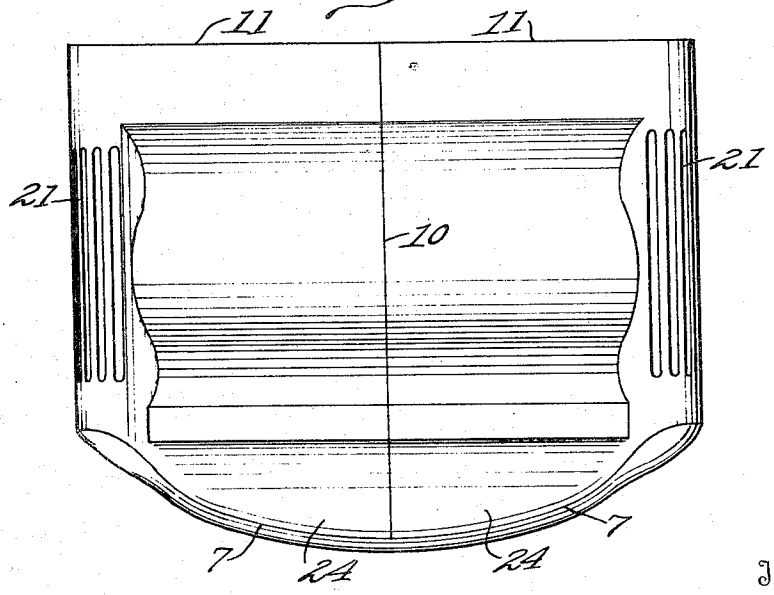


Fig. 9.



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METHOD OF PRODUCING GRAVE VAULT HOODS

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Fig. 10.

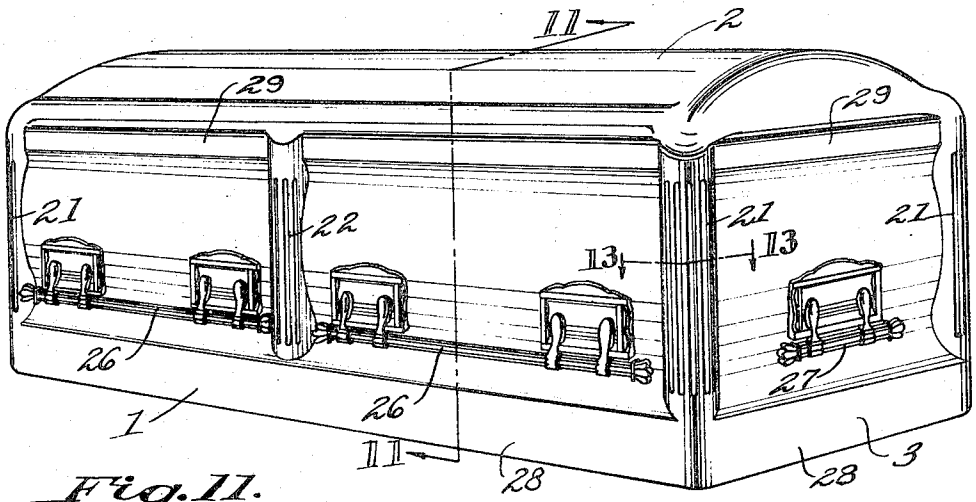

Fig. 11.

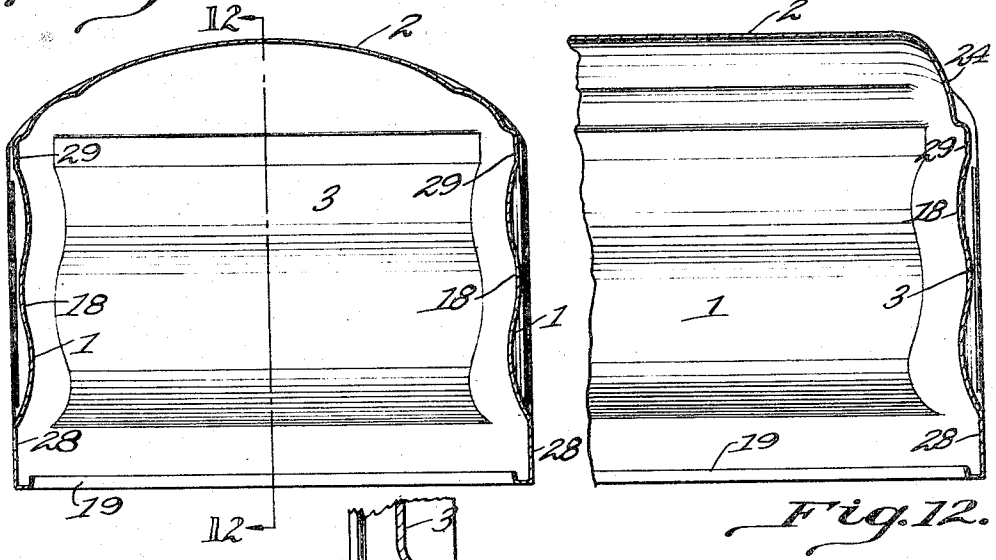

Fig. 12.

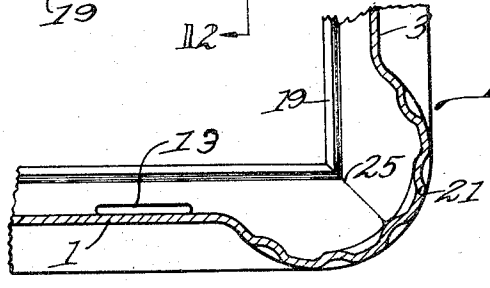

Fig. 13.

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Patented Mar. 10, 1936 2,033,809

UNITED STATES PATENT OFFICE

2,033,809

METHOD OF PRODUCING GRAVE VAULT HOODS

Allen F. Beck, Columbus, Ohio, assignor to The Clark Grave Vault Company, Columbus, Ohio, a corporation of Ohio

Application June 8, 1933, Serial No. 674,865

9 Claims. (Cl. 113—120)

This invention relates to improvements in grave vault manufacture, having for its objects, among others, to provide for the production of a grave vault hood or top section formed from a single sheet metal blank to produce integrally united top, side and end walls; to provide an improved method of successively operating upon the metal blank in the formation of the hood so that the latter, when completed, will be provided with integral side and end walls and a transversely arched top wall, and to provide a vault wherein the hood assembly is reenforced by integral column members, forming posts, which extend vertically of the hood, the said posts being arranged, in part, at the four vertical corners of the hood and function to augment the general strength of the completed hood and increase its load sustaining properties, and to provide a vault hood of improved appearance, durability, and possessing effective resistance to moisture entry.

For a further understanding of the invention, reference is to be had to the following description and the accompanying drawings, wherein:

Fig. 1 is a plan view of a sheet metal blank from which the vault hood comprising the present invention is formed;

Fig. 2 is a vertical transverse sectional view taken through the blank following the initial step of pressing or forming the top wall of the hood in the blank;

Fig. 3 is a plan view of the blank disclosing the form of the latter following the next operation of producing compound curvature in the portions of the blank forming the side and end walls of the completed hood section and at the same time showing the formation of the vertical posts or columns;

Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a detail longitudinal sectional view taken through one of the corner posts on the line 5—5 of Fig. 3;

Fig. 6 is a similar view on the plane indicated by the line 6—6 of Fig. 3;

Fig. 7 is a longitudinal sectional view taken through the blank formed in Fig. 3 but showing the wing members, forming the end walls bent upwardly or perpendicularly to the portions forming the side walls of the hood structure;

Fig. 8 is an end elevation of the blank with the wing members bent upwardly as shown in Fig. 7;

Fig. 9 is an end elevation of the completed hood section following the operation of bending the said walls of the hood to positions substantially perpendicular to the normal top wall thereof and showing the registration between the wing members and the top wall to produce the weld lines;

Fig. 10 is a perspective view of the complete grave vault hood or top section formed in accordance with the present invention and showing the same in its normal upright position;

Fig. 11 is a transverse sectional view taken through the complete hood section on the line 11—11 of Fig. 10;

Fig. 12 is a detail longitudinal sectional view on the plane indicated by the line 12—12 of Fig. 11;

Fig. 13 is a detail transverse sectional view taken through one of the corners of the vault on the line 13—13 of Fig. 10.

Referring more particularly to the drawings, and especially to Figs. 10 to 13 inclusive thereof, the improved grave vault hood section constituting the present invention comprises a sheet metal structure formed to include transversely spaced, longitudinally extending side walls 1—1, an arched or crowned top wall 2, vertically disposed end walls 3—3 uniting the top and side walls and an open bottom. This hood section is formed, as hereinafter set forth, from a single blank of sheet metal so that the walls thereof will be integrally united. It will be understood that the hood section is adapted for cooperation with the base section, not shown, of a complete grave vault in order to enclose and protect a coffin in the usual manner following interment.

Heretofore, it has been customary in the manufacture of grave vaults of this character to produce the top or hood sections with separate end walls, which latter are secured at their marginal edges by a welding operation to the adjoining edges of the side and top walls of the hood. This involves the operation of forming the end walls separately from the top and side-producing walls, together with the fitting and joining of the end walls in their operative positions and the subsequent welding of the marginal edges thereof to unite the same with the complemental edges of the side and top walls. This construction and method of operation necessarily involves a considerable amount of handling of the hood parts during the operations of blanking, pressing, uniting and welding the same with accompanying high manufacturing costs and often the production of structurally weak or imperfect hood sections.

To produce a grave vault hood of improved strength and appearance furnishes the present invention with one of its primary aims. In the

production of my improved vault hood, I employ a rectangular sheet of metal of appropriate gauge of thickness and external dimensions to form all walls of the complete hood. This sheet of metal, as indicated at 4 in Fig. 1, has the ends thereof blanked to produce the central cut-out portions 5 which form wing members 6 at the opposite longitudinal ends of the blank. The inner adjoining edges of the wing member 6 are provided with a compound curvature as indicated at 7, while the transverse edges 8 of the blank, adjoining the cut-out portions terminate in curved enlargements 9 which merge with the inner extremities of the curved edges 7. As shown in Fig. 1, the outer longitudinal edges 10 of the wing members 6 are sheared to desired form at, preferably, the same time the cut-out portions 5 are produced, and the edges 10 are so developed as to compensate for creep of the metal in the subsequent forming operations. The edges 10 terminate in perpendicularly extending outer longitudinal edges 11 which register with the corresponding outer longitudinal edges 12 of the blank, the edge portions 11 and 12 being separated by notches 12a, which are formed in the blank in transverse registration with the enlargements 9. Formed adjacent to each of the notches 12a and on opposite sides thereof are relatively restricted slots or drainage openings 13. The blank disclosed in Fig. 1 may be composed of a sheet of metal of required dimensions by a single blanking or stamping operation or suitable consecutive operations, if desired.

This blank is then transferred to a shaping press (not shown), in which the several parts of the vault hood are produced. In this press, the sheet or blank 4 is placed in a substantially horizontal plane and pressing dies first function, as shown in Fig. 2, to produce a longitudinally extending trough-shaped depression 14 centrally in the blank and which unites and lies between the cut-out regions 5. This depression is generally of arched formation and of compound curvature, there being a principal arched region 15 and minor arched portions 16 disposed longitudinally and at each side of the region 15. The depressed region of the blank 4 later forms the arched top wall 2 of the completed hood. The ends of the trough-shaped depression 14 are bent inwardly and slightly upwardly as indicated at 15a in order to join with the end walls of the completed hood and meet the sides 7 when the hood is formed.

The formation of the depression 14, as shown in Fig. 2, leaves flat side members 17—17 at each side thereof and also the flat wing members 6 in the same horizontal plane. Forming dies, not shown, are then advanced into engagement with the side members 17 and the wings 6 to produce therein the compound curvature 18, as shown particularly in Fig. 4. The outer longitudinally extending upwardly and inwardly turned flanged edges 19 are interrupted, as shown in Fig. 3, by the presence of the notches 12a. During the forming of the compound curvature 18 in the side and end members or following the same, there is likewise produced therein transversely extending depressions 20, which preferably have the cross sectional configuration disclosed in Figs. 5 and 6, and which, in the completed hood, form the fluted corner and middle posts 21 and 22 respectively of said hood.

After the configuration shown in Fig. 3 has been imparted to the blank, the end wing members 6 are bent upwardly by being rolled about forming mandrels (not shown) used in the final forming of the semi-round corner posts 21. It will also be noted that due to the presence of the notches 12 in the longitudinal edges of the blank, this upward bending movement of the members 6 may be accomplished with facility and at the same time the desired curved configuration of the post 21 obtained. The members 6 are bent until they assume substantially vertical positions, as indicated in Figs. 7 and 8. The next step in the shaping of the vault hood is then effected by maintaining the top-forming wall 2 in a clamped position in the press and lowering the clamping dies engaged therewith relative to the stationary side dies. This results in bending the side forming walls 17—17 upwardly to assume substantially vertical positions. This bending of the side members 17 about longitudinally extending lines 17a is facilitated by the restricted longitudinally disposed slitted portions 23 formed at the point of juncture between the edges 7 and the enlargements 9. During the upward bending operation of the side members 17, about the longitudinal lines set forth, corresponding movement is imparted to the already upwardly bent end members 6 so that when the upward bending of the members 17 to substantially vertical planes has been completed, the transverse edges 10 of the wing members 6 will be brought into the registering relation disclosed in Fig. 9, thus completing the general shape of the hood prior to welding. During the operation of producing the post depressions 20 and the compound curvature 18, inwardly and angularly extending members 24 are pressed from the wings 6 which jointly produce the upper portions of the end walls 3 when the end walls are positioned as disclosed in Figs. 9 and 12.

Following the upward bending of the side members 17, the formed blank is removed from the press and subjected to a welding operation. In this operation, the wing members are clamped and forced under pressure so that their edges 10 are brought into firm engagement. These edges may then be united preferably by an electric butt welding operation or oxy-acetylene welding. This welded line is located ordinarily in the vertical center of each of the end walls 3, and an additional weld takes place between the curved meeting edges 7 of the wing portions 24 and the downwardly curved adjoining ends of the top wall 2. Also, as shown in Fig. 13, the adjoining edges of the flanges 19 are to be welded as at 25 in any suitable manner. The enlargements 9 are so shaped that they extend over the tops of the corner posts to close these members in the completed hood and are suitably welded thereto by an oxy-acetylene weld or otherwise.

As shown in Fig. 10, the hood may be provided at its sides with pairs of hinged handle bars 26, while the end walls 3 may be provided with similar bars 27. As shown in Figs. 11 and 12, the side and end walls 1 and 3 have their lower portions 28 disposed to occupy vertical planes substantially in registration with the outer portions of the posts 21 and 22, while the upper portions 29 of the walls 1 and 3, above the curved areas 18 thereof, are disposed within the confines of the outer portions of said posts so that the hood tapers slightly from the base to the top thereof. A similar tapering effect is obtained at the ends by the corresponding surfaces of the end walls. The region 24 tapers back to meet the line of weld which curves downwardly from the top surface 2.

In view of the foregoing, it will be seen that the

present invention provides a grave vault hood composed essentially of side, top and end walls of integral formation and formed from a single substantially rectangular sheet of metal which may be blanked and pressed to impart the desired configuration to the walls of the hood. Heretofore, grave vault hoods have been characterized by their plain and unrelieved harsh treatment from a standpoint of ornamental and pleasing configuration. Not only, therefore, does the present invention provide for economy and facility in the manufacture of vault hoods, but it likewise attains, as an important object thereof, a symmetry and beauty of outline heretofore generally absent in grave vault construction. The fluted corner and middle posts impart strength and rigidity to the hood and form an outstanding feature of novelty in the external appearance of such a hood. This is likewise true of the end and side walls to which a compound curvature is imparted, in lieu of employing the flat, planar side and end walls heretofore common in structures of this type. The welding operation is simplified by the fact that the wings 6 of the blank forming the end walls 3 are angularly associated with the side walls instead of being formed separately as hitherto. This permits of the employment of the central butt weld, in lieu of the marginal welds used heretofore in uniting the separate end walls to the side and top walls. The corner and centerposts 21 and 22 may be of any desired cross sectional form either cylindrical, polygonal, vertically fluted or beaded without departing from the invention or varying the steps of producing the hood as above set forth. While the present description sets forth the preferred form of construction used in my improved vault hood and the preferred method for effecting its formation, nevertheless, it will be understood that I do not limit myself to the specific details of production and construction as described, but reserve the right to employ all such variations thereof that fall within the scope of the following claims.

A shaping press preferably used in carrying out the operations above set forth is described and claimed in my application bearing Serial Number 683,500, filed August 3, 1933.

What is claimed is:

1. The method of manufacturing a sheet metal grave vault hood wherein the top, side and end walls thereof are integrally united, which consists in blanking a sheet of metal to produce spaced wings adjacent to the corners thereof, bending the central longitudinally extending region of the sheet lying between said wings to produce the top wall of the hood, pressing the sides of the sheet and said wings to impart compound curvature thereto and produce transversely extending post-forming depressions in said sheet between the sides and wings, bending said wings vertically substantially around the axes of said transverse depressions, and then bending the sides of the sheet to positions substantially at right angles to the plane of the top wall forming region.

2. The method of manufacturing a one-piece metal grave vault hood from a blank having spaced longitudinally extending wings at the corners, which comprises pressing the metal of the side portions of the blank and the wings to impart thereto longitudinal corrugations and transverse integral post-forming corrugations at the junctions of the sides and the wings, and thereafter bending the wings at said post-forming corrugations and said side portions of the blank relative to the central portion thereof to form end and side walls respectively.

3. The method of manufacturing a one-piece grave vault hood from a blank having a top-forming central portion, side wall-forming portions and end wall forming spaced longitudinally extending wings, which comprises pressing the metal of the side portions and wings to impart thereto longitudinal corrugations having transverse spaces opposite the ends of the top-forming portion, pressing the material of the blank at the said spaces to form transverse post-forming corrugations, bending the wings at the post-forming corrugations to form the end walls, and thereafter bending the side wall-forming portions relative to the top to form said walls.

4. In the method of manufacturing a sheet metal grave vault hood wherein the top, side and end walls thereof are integrally united, the steps of blanking a substantially rectangular sheet of metal to produce spaced wings adjacent to the corners thereof, depressing the central longitudinally extending region of the sheet lying between said wings to produce a curved top wall, bending said wings and said side walls upwardly and vertically, said wings when so bent forming ends arranged to lie at right angles to the sides and with the sides substantially at right angles to the top, and joining the adjoining meeting edges of said wings where they meet each other and along the line of juncture between said wings and said top.

5. The method of manufacturing a sheet metal grave vault hood wherein the top, side and end walls are integrally united, which comprises the steps of blanking the sheet to produce spaced wing extensions at the opposite longitudinal ends thereof, depressing the central longitudinally extending region of the sheet lying between said wings to produce a curved top wall of the hood, bending the wing extensions vertically to substantially right angles to the plane of the curved top wall, and bending the sides of the sheet to positions substantially at right angles to the plane of the curved top wall.

6. The method of manufacturing a grave vault hood from a rectangular blank having spaced longitudinally extending wings at the four corners thereof and a central longitudinal region, which comprises the steps of deforming the central region to assume a curved shape, bending the wings to a vertical position at substantially right angles to the plane of the blank, bending the sides from which the wings extend to a vertical position substantially at right angles to the plane of the blank, and joining the meeting edges of the wings with the edges of the curved central region and with each other.

7. The method of manufacturing a sheet metal grave vault hood wherein the top, side and end walls thereof are integrally united, which comprises blanking a sheet to produce spaced wing extensions at the opposite longitudinal ends thereof, bending the central longitudinal region of the blank to assume a concavo-convex curvature, bending the wing extensions vertically about an angle of approximately 90 degrees, then bending the sides from which the wings originally extended about axes transverse to the axes about which the wing extensions were bent, and welding the registering vertical edges of the wing extensions.

8. The method of manufacturing a sheet metal grave vault hood from a blank having at its four corners spaced longitudinally extending flaring

wings, each pair of which define a convexly curved edge when in vertical registration at their side meeting edges, said blank having a rectangular curved central region, which comprises bending the wings upwardly at right angles with the sides from which they extend, and then bending the sides upwardly at right angles to the central region, whereby the curved edges of the flaring wings form convexly curved edges registerable with the edges of the central region.

9. The method of manufacturing a one-piece metal grave vault hood from a blank having spaced longitudinally extending wings at the corners, which comprises pressing the metal of the side portions of the blank and the wings to impart thereto transverse integral post-forming corrugations at least at the junctions of the sides and the wings, and thereafter bending the wings at said post-forming corrugations and said side portions of the blank relative to the central portion thereof to form end and side walls respectively.

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