H. HENSCHEL.

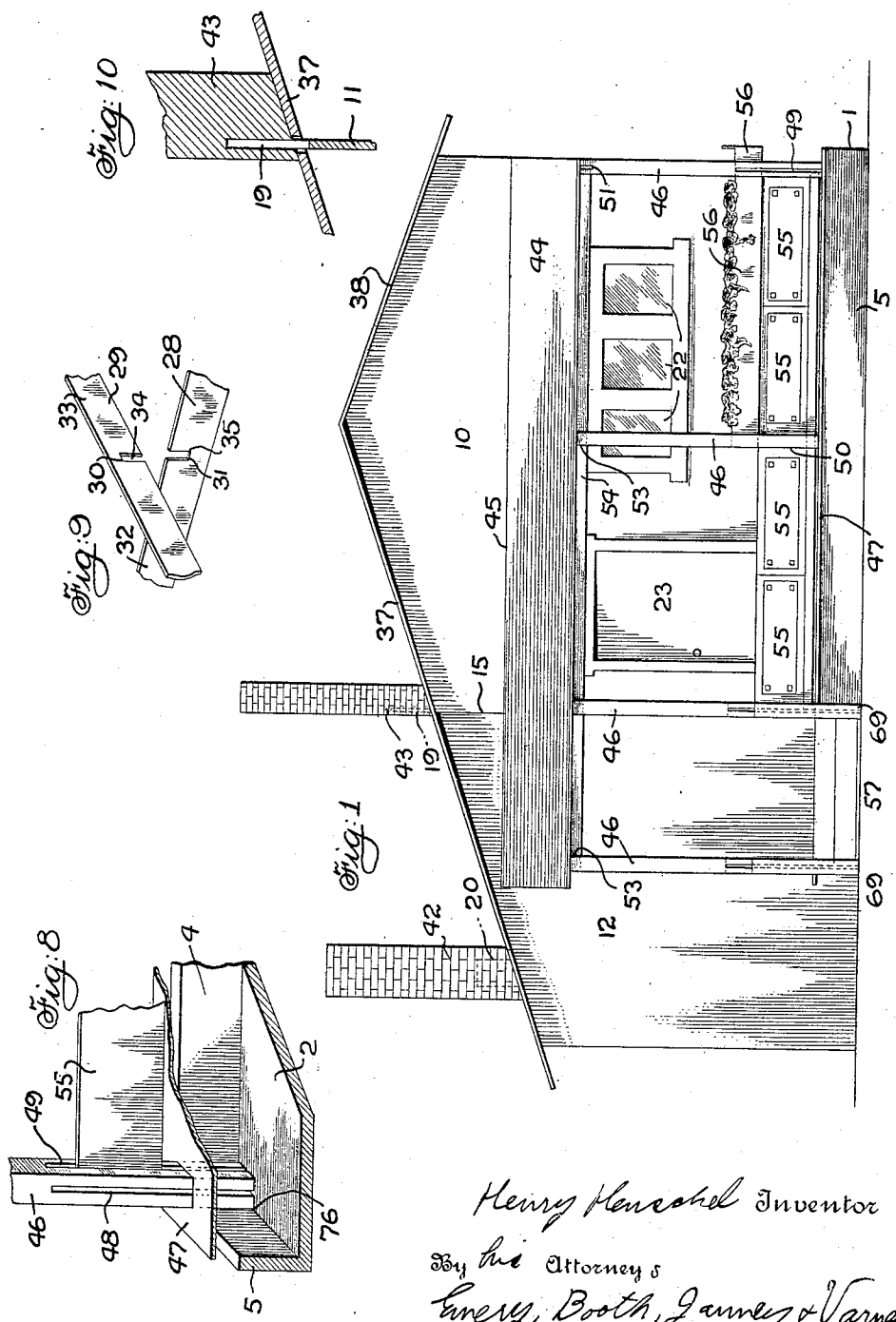
FOLDABLE STRUCTURE.

APPLICATION FILED MAY 24, 1918.

1,279,866.

Patented Sept. 24, 1918.

5 SHEETS—SHEET 1.



Henry Henschel Inventor

By his Attorneys

Emery, Booth, Janney & Varney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

H. HENSCHEL.

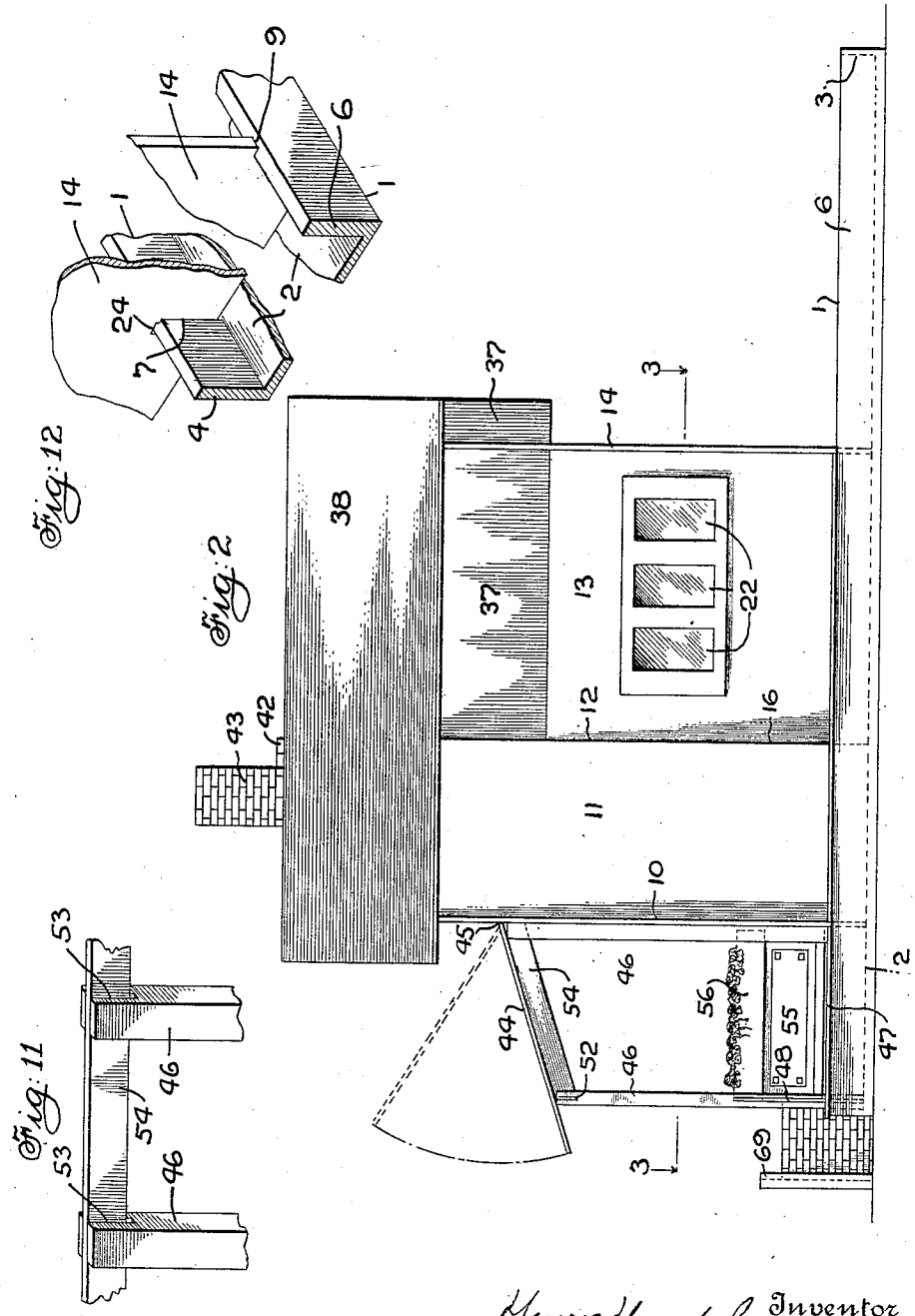
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5 SHEETS—SHEET 3.

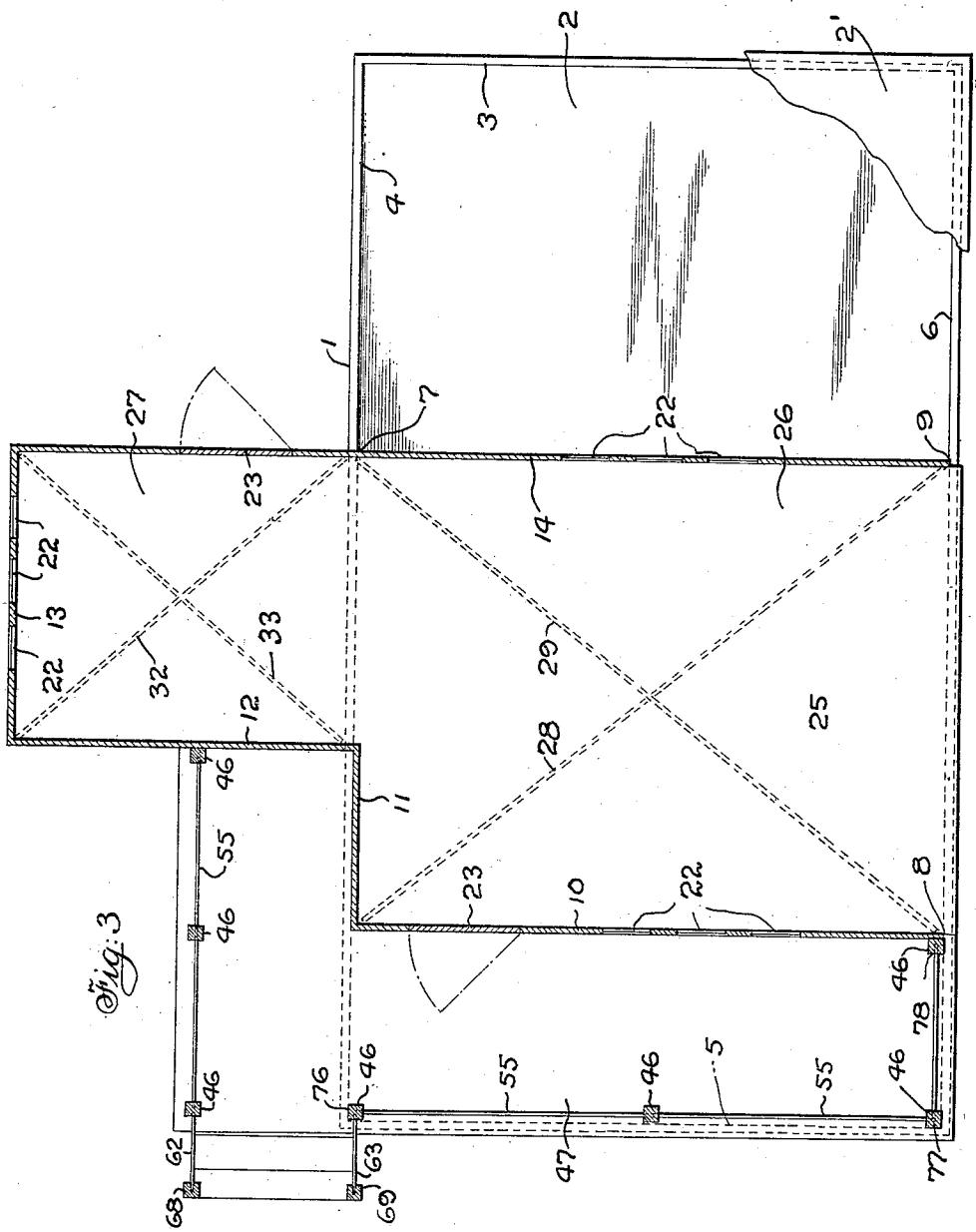


Fig. 3

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5 SHEETS—SHEET 4.

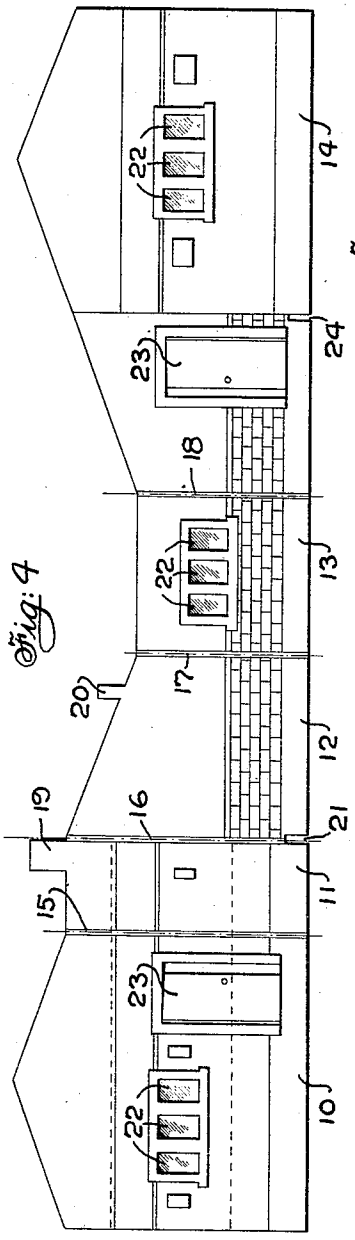


Fig: 4

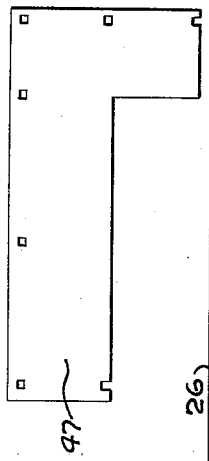


Fig: 6

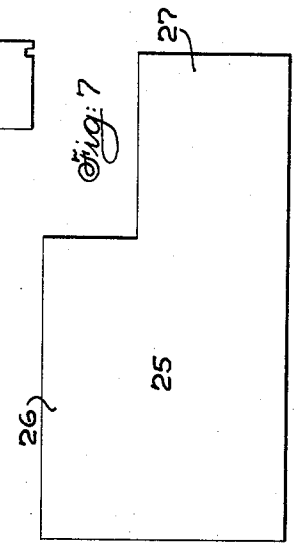


Fig: 7

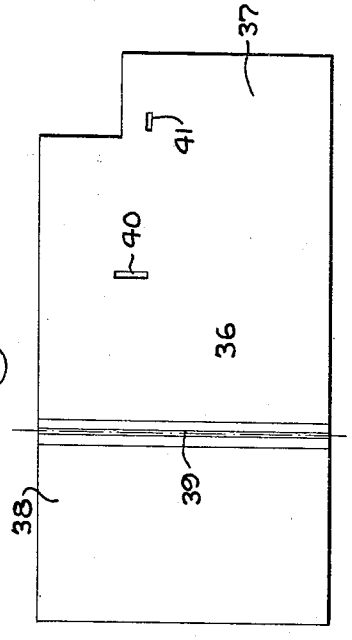


Fig: 5

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5 SHEETS—SHEET 5.

Fig: 13

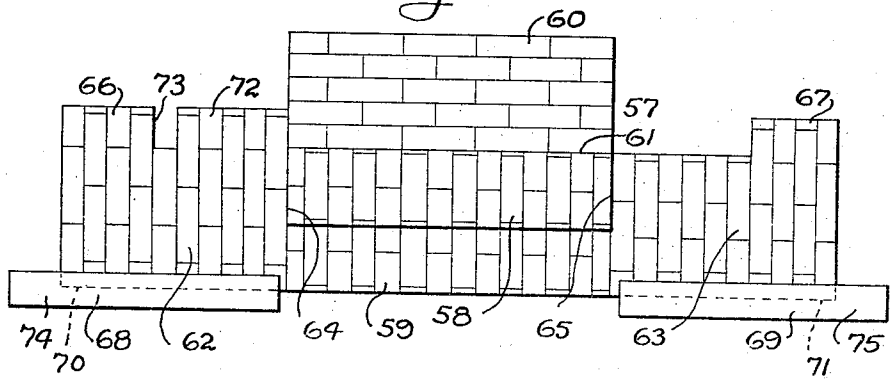


Fig: 15

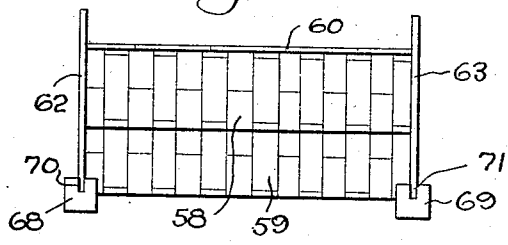


Fig: 14

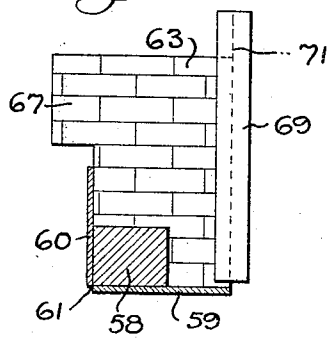
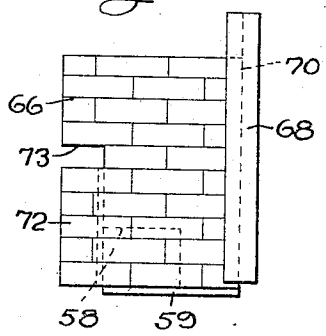


Fig: 16



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UNITED STATES PATENT OFFICE.

HENRY HENSCHEL, OF NEW YORK, N. Y., ASSIGNOR TO McLOUGHLIN BROTHERS, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FOLDABLE STRUCTURE.

1,279,866. Specification of Letters Patent. **Patented Sept. 24, 1918.**

Application filed May 24, 1918. Serial No. 236,277.

To all whom it may concern:

Be it known that I, HENRY HENSCHEL, a citizen of the United States, and a resident of the county of Bronx, city and State of New York, have invented an Improvement in Foldable Structures, of which the following is a specification.

My invention relates to collapsible or foldable structures. In one of its embodiments my invention may be applied to foldable or collapsible "toy houses", and particularly such as are adapted to be contained in disassembled or folded form in a suitable receptacle or container.

It is the object of the present invention to provide structures of the character indicated which shall be easy to assemble and durable and rigid when assembled, and which shall be simple in construction and compact when disassembled so as to be readily contained within the receptacle which may accompany such structures.

By way of example I have illustrated a preferred embodiment of my invention in the accompanying drawings wherein,

Figure 1 is a front elevation of said embodiment;

Fig. 2 is a side elevation of the same;

Fig. 3 is a plan view taken along line 3—3 of Fig. 2.

Fig. 4 is a development of the side-wall members in extended position;

Fig. 5 is a similar view of the main roof members;

Fig. 6 is a plan view of the auxiliary floor member;

Fig. 7 is a similar view of the main floor member;

Fig. 8 is a detail view, in perspective, showing means for supporting the veranda roof and associated parts;

Fig. 9 is a similar view of the floor bracing members;

Fig. 10 is a cross-sectional view, partly in elevation showing one of the chimneys in position on the roof;

Fig. 11 is a detail view, in perspective, showing the top of the columns;

Fig. 12 is a similar view showing the manner of securing the side-walls to the receptacle;

Fig. 13 is a plan view, in extended position, of the stairway;

Fig. 14 is a cross-section of the same in assembled or closed position;

Fig. 15 is a plan view of the same;

Fig. 16 is a view of end elevation of the same.

Referring to the embodiment herein shown and described by way of example merely, the various parts that go to make up the structure of said embodiment may be contained within a receptacle 1 having wall portions 3, 4, 5, and 6, a bottom 2, and a cover member 2′. Certain of the wall portions, as for example, the wall portions 4 and 6, are provided with grooves or slots therein, shown as grooves 8 and 9 on the inner face of wall portion 6, and a groove 7 on the inner face of wall portion 5 disposed substantially opposite to groove 9.

The side-wall members are shown at 10, 11, 12, 13, and 14, and are preferably hingedly connected to each other at 15, 16, 17, and 18, respectively. In the illustrative embodiment herein described, I prefer to make one of the side-wall members, as member 14, of a length greater than the cross-dimension of receptacle 1, although said length may preferably be less than the inner dimension of receptacle 1 so that the side-wall members 10, 11, 12, 13, and 14 may be folded together and contained within said receptacle. I prefer to provide certain of the side-wall members, herein shown as the two side-wall members 11 and 12, with tabs or projections 19 and 20, respectively. These tabs or projections 19 and 20, and the side-wall members with which they are associated, are so arranged with respect to each other that they will be transverse to each other when the side-wall members are in assembled position.

I provide a slot 21 preferably positioned adjacent the hinge between a plurality of adjoining side-wall members, herein shown as a slot 21 in side-wall member 12 adjacent hinge 16. I also provide a slot 24 preferably positioned in said side-wall member 14. The purpose of these slots is to provide means for engagement with the wall portions of receptacle 1 for positioning the side-wall members when the structure is assembled.

In assembling the side-wall members, said members are so manipulated that the free end of member 10 enters and engages groove 8 in wall portion 6. Member 10 is preferably so proportioned as to be flush against the inner face of wall portion 4. Member

11 will then extend along a portion of the inner face of wall portion 4, while member 12 will, by means of slot 21, pass over wall portion 4 and extend beyond receptacle 1. Similarly member 13 will be outside of receptacle 1. Member 14, which completes the configuration of the side-wall members when assembled, extends from outside the receptacle across wall portion 4 and within receptacle 1 until its inner free end engages groove 9 of wall portion 6. Member 14 also engages wall portion 4 by the engagement of the walls of slot 24 with groove 7 in said wall portion and with the corresponding outer surface portion of said wall portion.

From the foregoing description it will be clear that by means of the locking engagement provided by grooves 7, 8, and 9 and the walls of slots 21 and 24, the side-wall members will be firmly locked in position. In order to further secure this locking action, I provide a plurality of diagonally disposed members 28 and 29 provided with oppositely disposed, inter-engaging slots 30 and 31 respectively, as shown more clearly in Figs. 3 and 9. Similarly that portion of the floor space or area formed by the side-wall members outside of receptacle 1 is provided with a pair of diagonally disposed reinforcing members 32 and 33 provided with the coöperating slots 34 and 35, respectively, to reinforce said outer floor area.

Coöperating with the side-wall members is a main floor member 25, shown in Figs. 3 and 7 which serves to further brace or reinforce said side-wall members. Preferably main-floor member 25 comprises an inner floor portion 26 and an outer floor portion 27, said portions preferably being integral for giving increased rigidity to the structure. The side-wall members may be provided at suitable portions thereof with the windows 22, 22, 22 and the hinged doors 23, 23.

Coöperating with the side-wall members is a main roof member 36 comprising a plurality of hingedly connected portions 37 and 38 hinged at 39 to provide a gable roof construction. Preferably one of the roof portions, such as the portion 37, is provided with a plurality of transversely disposed slots 40 and 41 for coöperating with the respective tabs 19 and 20 to help lock the roof, side members, and receptacle together. Removable chimney pieces 42 and 43 may be provided for coöperation with tabs 19 and 20. These chimney pieces furthermore help to lock the roof against moving outwardly along tabs 19 and 20, respectively.

Hingedly connected to one of the side-wall members, as to member 10, at 45, and preferably extending beyond said member 10, as shown, is a veranda roof member 44. I provide means coöperating with said veranda roof to properly maintain the same in raised position. Such means preferably comprises a plurality of columns 46 which preferably pass through an auxiliary floor member 47 and bind against the inner face of one or more of the wall portions, herein shown as wall portions 4, 5 and 6. In this way auxiliary floor member 47 is locked in position between side-wall member 10 and wall portions 4, 5 and 6 of receptacle 1.

The columns 46 are slotted at various portions thereof for the purpose of receiving and maintaining in position finishing members, such as fences, door steps, flower boxes, etc. For this purpose certain of the columns 46 are slotted through both cross-sectional dimensions of the same, as indicated at 48 and 49, while others are slotted only along one cross-sectional dimension, as indicated at 50. The columns are also slotted at their upper portions, one of the columns being slotted through both cross-sectional dimensions, as indicated at 51 and 52, while the others of said columns 46 are slotted through one cross-sectional dimension only, as indicated at 53.

Slots 51, 52, and 53 receive a plurality of transverse members 54 for coöperating with the veranda roof portion 44 to give the same a finished appearance. The double slots 51 and 52 act to provide means for receiving the ends of members 54 in a single member 46 and bind such members 54 together in a rigid construction. Slots 48, 49 and 50 act to receive and retain in position the finishing members, herein shown as the fences 55, flower boxes 56, and door steps 57. The double slots 48 and 49 provide means for properly connecting the various finishing members, to provide a rigid construction.

The various parts are preferably so proportioned that the device may be readily disassembled and folded up so as to be conveniently contained in receptacle 1 provided with the cover 2′. The arrangement of parts is such that the device, when assembled, is readily and rigidly maintained in proper position, thereby providing a superior construction, while still permitting the device to be readily disassembled and folded away within the receptacle.

In Figs. 13 to 16, inclusive, I have shown in detail one form of stairway that may be associated with the illustrative embodiment of my invention herein shown and described. The stairway, which is generally indicated by reference numeral 57, may comprise a block-like member 58 with which is rigidly associated a forwardly extending member 59, as by being glued or otherwise attached to member 58.

Hingedly associated with block-like member 58 is a rearwardly projecting portion 60, which also extends longitudinally of

member 58. Member 60 is preferably hingedly attached, as at 61, to block-like member 58 and forwardly projecting member 59. Also hingedly associated with block-like member 58 and forwardly projecting member 59, rigidly associated therewith, are a plurality of end members 62 and 63. Members 62 and 63 are hinged to the ends of members 58 and 59, as at 64 and 65, respectively.

End members 62 and 63 are provided with a plurality of projecting tabs 66 and 67, respectively. Said members are also provided with a plurality of posts 68 and 69, respectively, which posts are preferably slotted, as indicated at 70 and 71, respectively. These posts are for the purpose of reinforcing and giving a finished appearance to the end members 62 and 63. In view of their construction, they are readily removable, slots 70 and 71 being made small enough to exert a gripping action on those portions of members 62 and 63 with which they come into contact when applied to said members, while being so constructed as to be removable from said members when the stairway is to be disassembled. Member 62, which, when the structure is entirely assembled, is in a more exposed position than member 63, may be provided with an additional projection 72, between which and projecting tab 56 is defined a slot 73 which coöperates with auxiliary floor member 47 to help maintain the stairway 57 in position with respect to the remaining parts of the structure.

In assembling the stairway, the hinged members are folded into the positions illustrated in Figs. 14, 15 and 16, and projecting tabs 66 and 67 are then inserted into the transverse slots of two of the columns 46, as shown more clearly in Figs. 1 and 2. Slot 73 will receive a portion of auxiliary floor member 47 and thereby assist in maintaining stairway 57 in rigid position. It will also be noted that posts 68 and 69 are somewhat longer than the end members 62 and 63 to which they are attached. The purpose of this is to provide a plurality of free slotted portions 74 and 75 which may, if desired, be utilized for positioning further finishing members, such as flower boxes, and the like, between said slotted ends 74 and 75 of posts 68 and 69, and the transverse slots of columns 46.

As indicated more clearly in Fig. 3 of the drawing, those of columns 46 which are contained within the end of receptacle 1, engage the corners of said receptacle, as at 76 and 77, to firmly bind the said columns and their associated parts in position. Similarly, the column positioned at portion 78 of the receptacle binds against side-wall member 10 through the mediation of auxiliary floor member 47 to help position the various parts of the device.

It is of course to be understood that numerous embodiments of my invention may be devised within the scope of the accompanying claims, the preferred embodiment herein being shown and described for purposes of illustration only.

What I claim is:

1. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, and a receptacle having wall portions for containing such members when in folded, disassembled position, said receptacle being provided with a plurality of grooves in one or more of its portions coöperating with one or more of said members for positioning the same with respect to said receptacle when said members are assembled.

2. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, and a rectangular receptacle having wall portions for containing said members when in folded, disassembled position, one of said members being longer than the width of said receptacle and said receptacle being provided with one or more grooves in its wall portions coöperating with one or more of said members, including said member longer than the width of said receptacle, for positioning said members with respect to said receptacle when said members are assembled.

3. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, an overhanging-roof portion hingedly connected to one of said side-wall members, and a receptacle having wall portions for containing such members when in folded, disassembled position, said receptacle being provided with a plurality of grooves in one or more of its wall portions coöperating with one or more of said members to position the same with respect to said receptacle when said members are assembled.

4. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, an overhanging-roof portion hingedly connected to one of said side-wall members, and a rectangular receptacle having wall portions for containing said members when in folded, disassembled position, one of said members being longer than the width of said receptacle and said receptacle being provided with one or more grooves in its wall portions cooperating with one or more of said members, including said member longer than the width of said receptacle, for positioning said members with respect to said receptacle when said members are assembled.

5. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, a receptacle having wall portions for containing such

members when in folded, disassembled position, said receptacle being provided with a plurality of grooves in one or more of its wall portions coöperating with one or more of said members for positioning the same with respect to said receptacle when said members are assembled, and a main floor member of a size corresponding to the floor area of said members when assembled and adapted to be contained in said receptacle for coöperating with the latter and with said members to help lock the same in assembled position.

6. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, a rectangular receptacle having wall portions for containing said members when in folded, disassembled position, one of said members being longer than the width of said receptacle and said receptacle being provided with one or more grooves in its wall portions coöperating with one or more of said members, including said member longer than the width of said receptacle, for positioning said members with respect to said receptacle when said members are assembled, and a main floor member of a size corresponding to the floor area of said members when assembled and adapted to be contained in said receptacle for coöperating with the latter and with said members to help lock the same in assembled position.

7. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, a receptacle having wall portions for containing such members when in folded, disassembled position, said receptacle being provided with a plurality of grooves in one or more of its wall portions coöperating with one or more of said members for positioning the same with respect to said receptacle when said members are assembled, a main roof member provided with a plurality of apertures, and a plurality of projections at the top of a plurality of non-parallel side-wall members coöperating with said main roof member and the apertures therein to help lock said side-wall members.

8. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, a rectangular receptacle having wall portions for containing said members when in folded, disassembled position, one of said members being longer than the width of said receptacle and said receptacle being provided with one or more grooves in its wall portions coöperating with one or more of said members, including said member longer than the width of said receptacle, for positioning said members with respect to said receptacle when said members are assembled, a main roof member provided with a plurality of apertures, and a plurality of projections at the top of a plurality of non-parallel side-wall members coöperating with said main roof member and the apertures therein to help lock said side-wall members.

9. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, a receptacle having wall portions for containing such members when in folded, disassembled position, said receptacle being provided with a plurality of grooves in one or more of its wall portions coöperating with one or more of said members to position the same with respect to said receptacle when said members are assembled, a main roof member comprising a plurality of hingedly connected roof portions, one of said portions being provided with a plurality of slots therein, and a plurality of tabs projecting from the top of a plurality of non-parallel side-wall members and coöperating with said main roof member and the slots therein to help lock said side-wall members.

10. An article of manufacture comprising, in combination, a plurality of hingedly connected side-wall members, a rectangular receptacle having wall portions for containing said members when in folded, disassembled position, one of said members being longer than the width of said receptacle and said receptacle being provided with one or more grooves in its wall portions coöperating with one or more of said members, including said member longer than the width of said receptacle, for positioning said members with respect to said receptacle when said members are assembled, a main roof member comprising a plurality of hingedly connected roof portions, one of said portions being provided with a plurality of slots therein, and a plurality of tabs projecting from the top of a plurality of non-parallel side-wall members and coöperating with said main roof member and the slots therein to help lock said side-wall members.

11. A member for forming a foldable house comprising a plurality of hingedly connected side-wall portions, and a veranda-roof member hingedly connected to one of said side-wall portions.

12. A member for forming a foldable house comprising a plurality of hingedly connected side-wall portions, and a plurality of projections on the top of a plurality of such of said side-wall members as are not parallel to each other when the house is assembled.

13. A member for forming a foldable house comprising a plurality of hingedly connected side-wall portions, a veranda-roof member hingedly connected to one of said side-wall portions, and a plurality of projec-

tions on the top of a plurality of such of said side-wall members as are not parallel to each other when the house is assembled.

14. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, a main floor member resting upon said receptacle against said side wall member and having a portion at least thereof extending beyond said receptacle, an auxiliary floor member adjacent said side-wall member, and means coöperating with said floor member for positioning the same.

15. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, a main floor member resting upon said receptacle against said side wall member and having a portion at least thereof extending beyond said receptacle, an auxiliary floor member adjacent said side-wall member, and means passing through said floor member and coöperating with said side-wall member for positioning said floor member.

16. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, an auxiliary floor member adjacent said side-wall member, a veranda-roof member hingedly connected to said side-wall member, and means coöperating with said floor member for positioning the latter and maintaining said veranda-roof member in raised position.

17. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, an auxiliary floor member adjacent said side wall member, a veranda-roof member hingedly connected to said side-wall member, and means passing through said floor member and coöperating with said side-wall member for positioning said floor member and for maintaining said veranda-roof member in raised position.

18. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, a main floor member resting upon said receptacle against said side wall member and having a portion at least thereof extending beyond said receptacle, an auxiliary floor member adjacent said side-wall member, means coöperating with said floor member for positioning the same, and one or more positioning members passing through said floor member and coöperating with the same for positioning said floor member.

19. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, an auxiliary floor member adjacent said side-wall member, means cooperating with said floor member for positioning the same, one or more slotted positioning members passing through said floor member and coöperating with the same for positioning said floor member, and one or more finishing members positioned by said slots.

20. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, an auxiliary floor member adjacent said side-wall member, means cooperating with said floor member for positioning the same, a veranda roof member hingedly connected to said side-wall member, and one or more positioning members passing through said floor member and cooperating with the same for positioning said floor member and for maintaining said veranda roof member in raised position.

21. An article of manufacture comprising, in combination, a side-wall member, a receptacle for containing said side-wall member provided with means coöperating with said member for positioning the same in upright position, an auxiliary floor member adjacent said side-wall member, means cooperating with said floor member for positioning the same, a veranda-roof member hingedly connected to said side-wall member, one or more slotted positioning members passing through said floor member and coöperating with the same for positioning said floor member and for maintaining said veranda-roof member in raised position, and one or more finishing members positioned by said slots.

22. An article of manufacture comprising, in combination, a block-like member, a forwardly projecting portion rigidly associated with said member and extending longitudinally thereof, and a plurality of side members hingedly associated with said block-like member at the ends thereof.

23. An article of manufacture comprising, in combination, a block-like member, a forwardly projecting portion rigidly associated with said member and extending longitudinally thereof, a rearwardly projecting portion hingedly associated with said member and extending longitudinally thereof, and a plurality of side members hingedly associ-

ated with said block-like member at the ends thereof.

24. An article of manufacture comprising, in combination, a block-like member, a forwardly projecting portion rigidly associated with said member and extending longitudinally thereof, and a plurality of side members hingedly associated with said block-like member at the ends thereof, and a plurality of slotted reinforcing members removably associated with said side members.

25. An article of manufacture comprising, in combination, a block-like member, a forwardly projecting portion rigidly associated with said member and extending longitudinally thereof, a rearwardly projecting portion hingedly associated with said member and extending longitudinally thereof, a plurality of side members hingedly associated with said block-like member at the ends thereof, and a plurality of slotted reinforcing members removably associated with said side-members.

26. An article of manufacture comprising, in combination, a block-like member, a forwardly projecting portion rigidly associated with said member and extending longitudinally thereof, and a plurality of side members hingedly associated with said block-like member at the ends thereof, said side-members being provided with projecting tabs.

27. An article of manufacture comprising, in combination, a block-like member, a forwardly projecting portion rigidly associated with said member and extending longitudinally thereof, a rearwardly projecting portion hingedly associated with said member and extending longitudinally thereof, and a plurality of side members hingedly associated with said block-like member at the ends thereof, said side members being provided with projecting tabs.

In testimony whereof, I have signed my name to this specification, this 22nd day of May, 1918.

HENRY HENSCHEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."