June 7, 1955 S. ZAUSNER 2,709,838

GREENHOUSE

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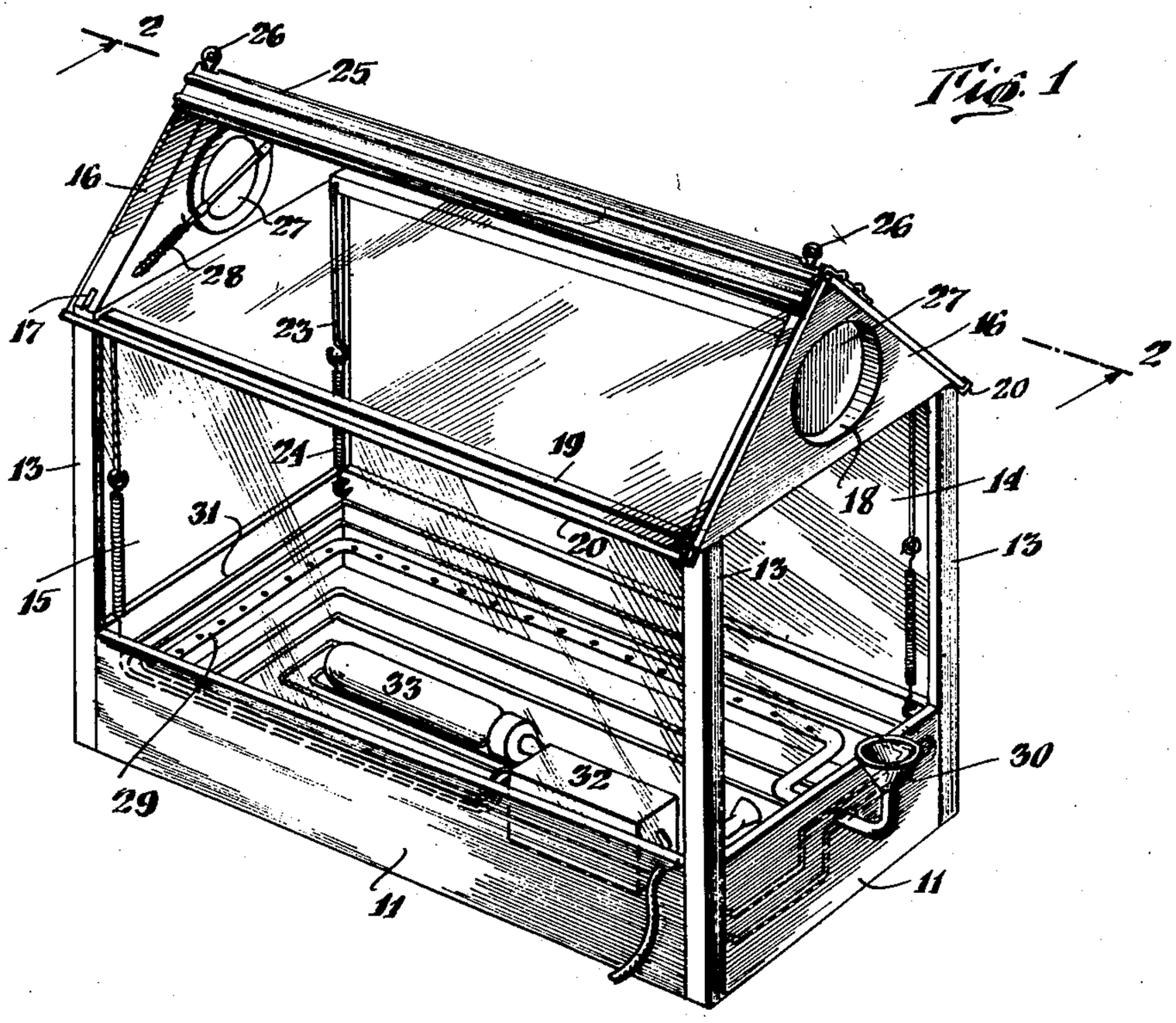

Fig. 1

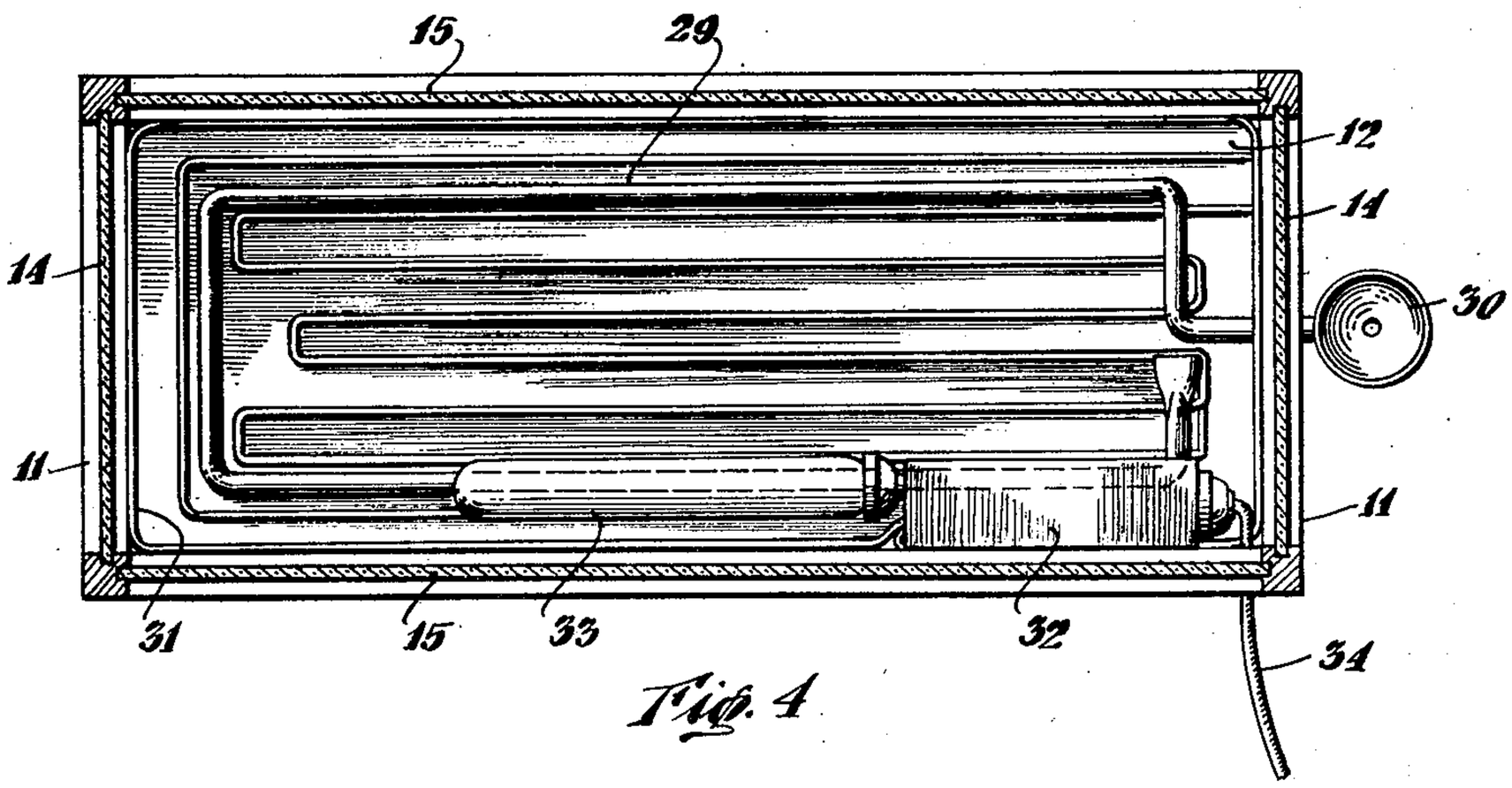

Fig. 4

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Fig. 2

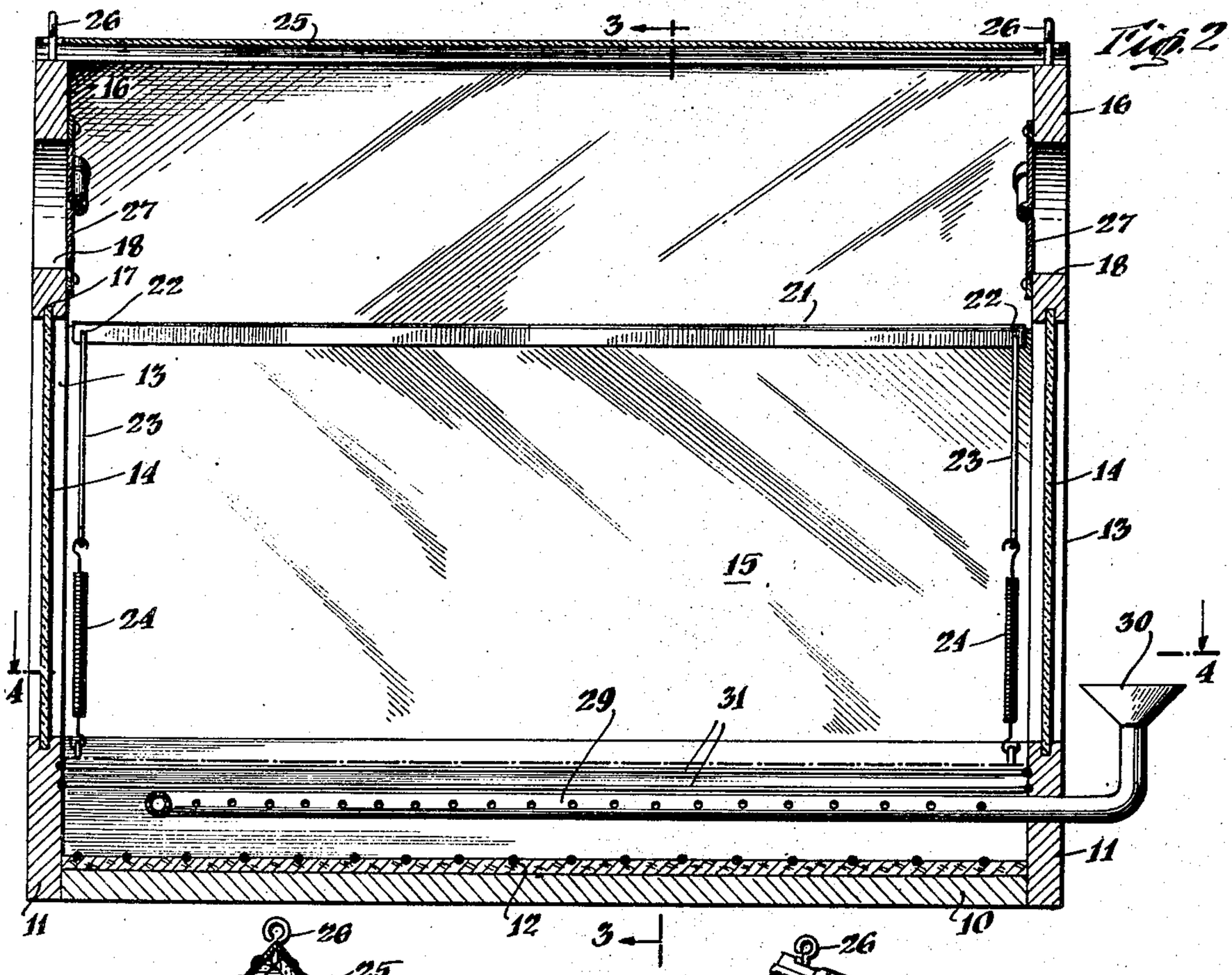


Fig. 3

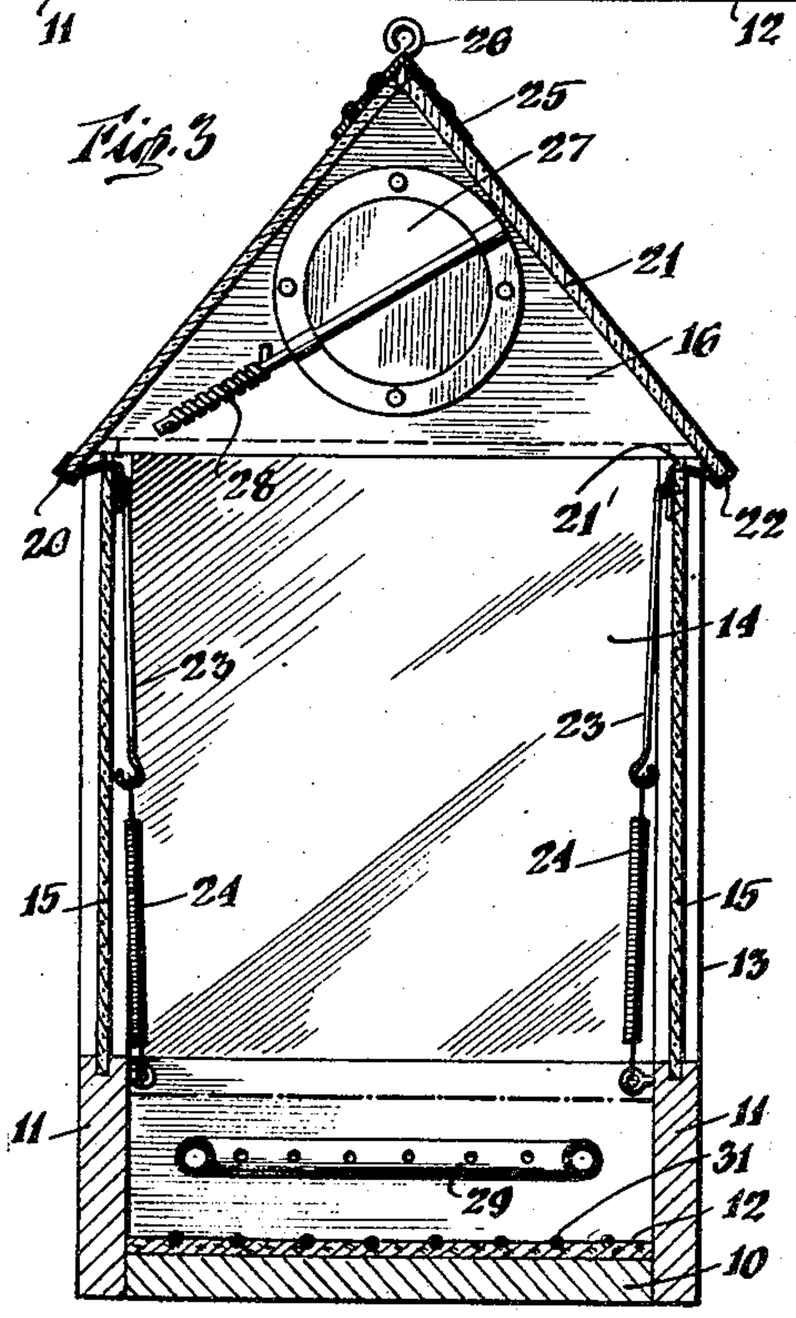
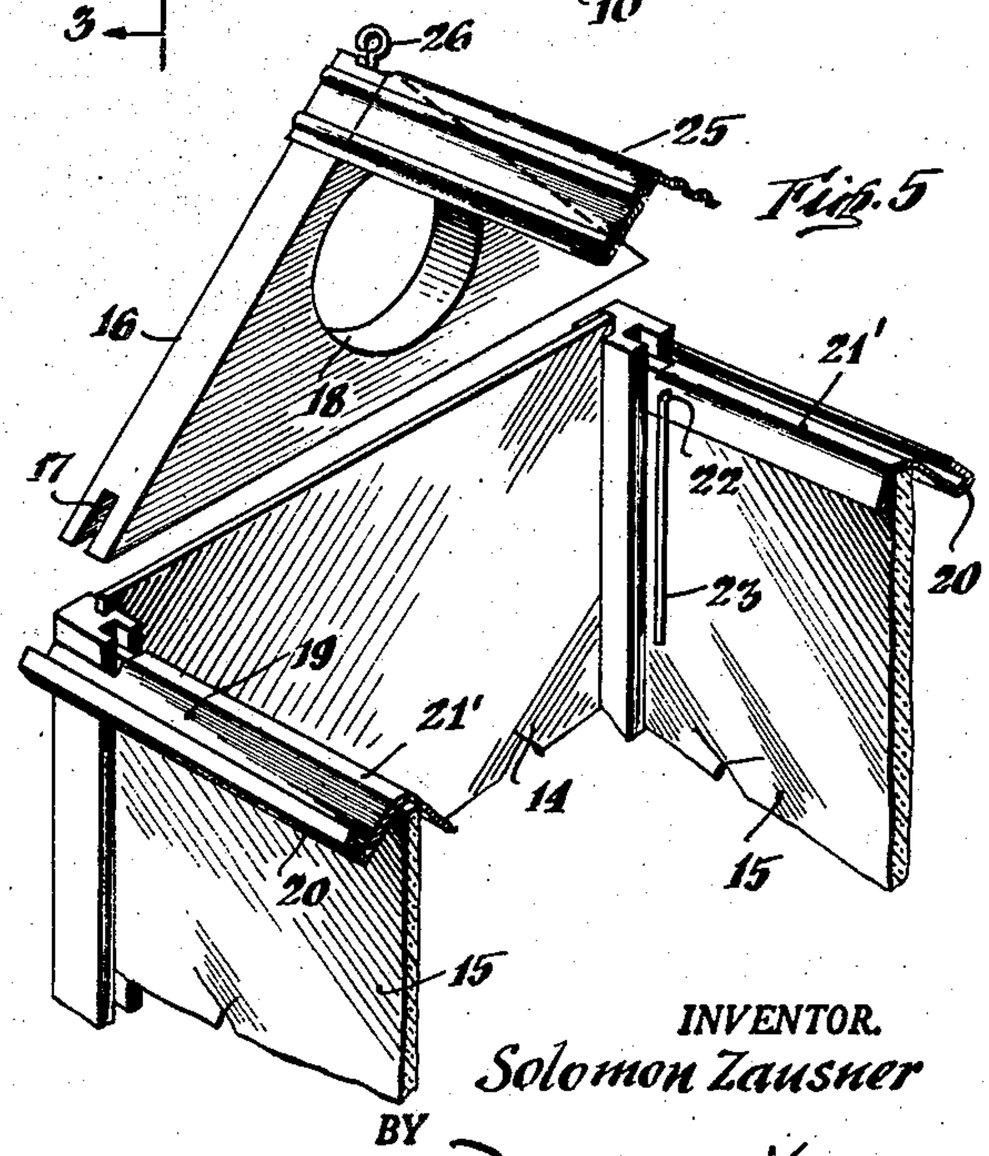


Fig. 5



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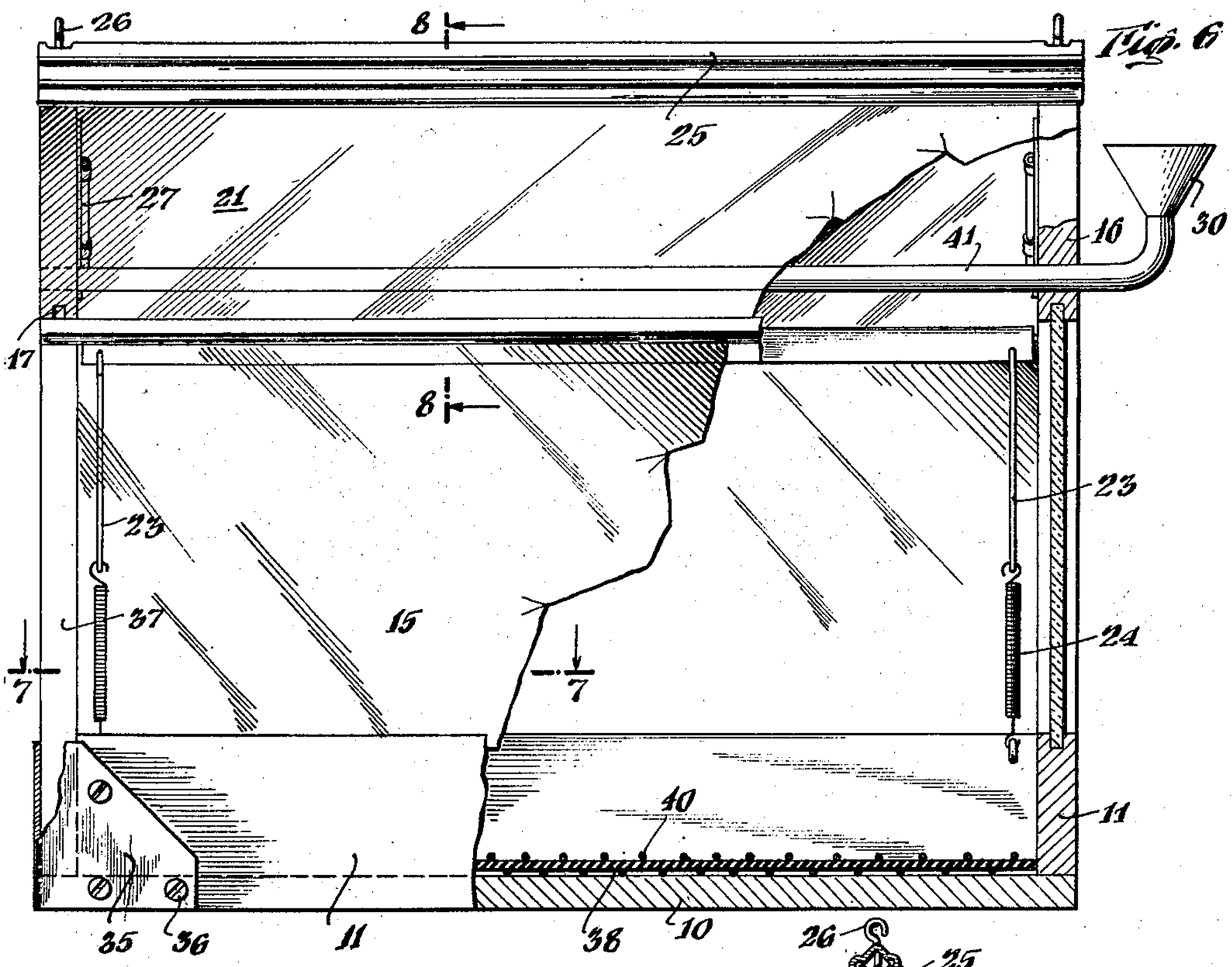

Fig. 6

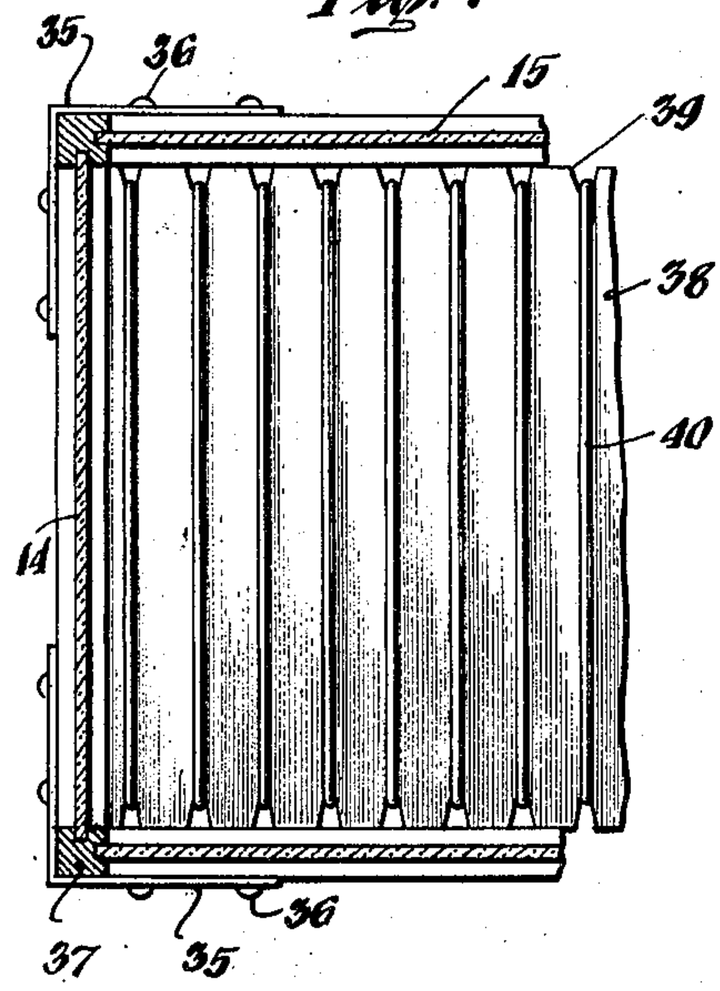

Fig. 7

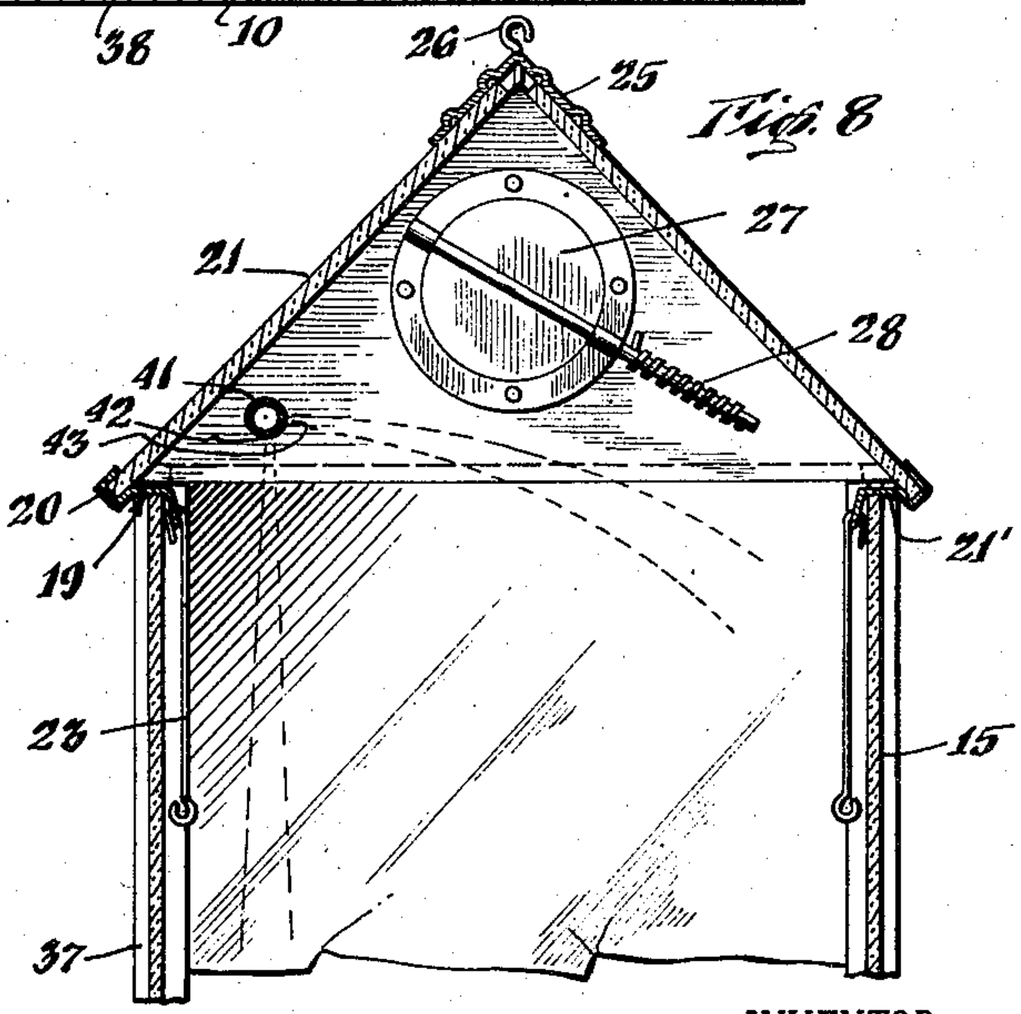

Fig. 8

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GREENHOUSE

Solomon Zausner, Warrenville, N. J.

Application May 1, 1951, Serial No. 223,969

10 Claims. (Cl. 20—2)

This invention relates to a functionally improved housing structure of novel design; the present invention in its more specific aspects aiming primarily to provide a greenhouse assembly. It is to be understood, however, that the teachings of the present invention are not limited to use in this connection.

Primary objects reside in the provision of a lightweight structure which in disassembled condition will occupy a minimum amount of space and the several parts of which may be manufactured with facility to embody rugged designs.

A further object is that of furnishing a unit of this type, the parts of which may readily be assembled to furnish a unitary and rigid structure functioning over long periods of time with freedom from all difficulties.

Among other objects of the invention are those of designing an assembly in which the interior will be adequately and preferably automatically ventilated while at the same time the enclosure will protect the plant bed against drafts, sudden changes of temperature, etc.; that bed being readily accessible when desired and being maintained under proper heat and moisture conditions.

With these and other objects in mind reference is had to the attached sheets of drawings illustrating one practical embodiment of the invention, and in which:

Fig. 1 is a perspective view of the housing structure;

Fig. 2 is a sectional view taken along line **2—2** in the direction of the arrows as in Fig. 1;

Fig. 3 is a transverse sectional view taken along line **3—3** in the direction of the arrows as in Fig. 2;

Fig. 4 is a sectional plan view taken along line **4—4** in the direction of the arrows as indicated in Fig. 2;

Fig. 5 is a fragmentary perspective view of the upper end assembly embodied in the structure;

Fig. 6 is a view similar to Fig. 2 but showing an alternative and preferred structure;

Fig. 7 is a fragmentary sectional plan view taken along line **7—7** in the direction of the arrows as indicated in Fig. 6; and

Fig. 8 is a fragmentary section along line **8—8** in the direction of the arrows as also shown in Fig. 6.

As afore brought out, the present invention is primarily dedicated to a greenhouse structure. Accordingly, it will be described in this preferred embodiment. The description and the drawings are, however, to be taken in an illustrative rather than a limiting sense, except where otherwise indicated in the claims.

Thus, in these views the numeral **10** indicates a base from which side walls **11** extend upwardly to provide in effect a pan for the reception of earth or other material in which plants are conveniently disposed. The inner faces of the base and side walls may be coated with protective substance and a layer of similar material is also disposed upon the upper face of the base. Extending upwardly from the ends of this pan structure as in Figs. 1 to 5, are corner posts **13** which have their adjacent side edges formed with grooves. These receive the edges of end panels **14** and side panels **15** all of

which are preferably of glass and especially glass which will permit of ready penetration by ultra-violet rays.

The upper edges of panels **14** as shown may extend above the upper edges of panels **15** and also above the upper ends of the posts **13**. End members **16** have their lower edges grooved as at **17** so as to receive the upper edges of panels **14**. These end members are conveniently of triangular configuration and formed with openings **18**. Thus, with these end members disposed in positions upon panels **14**, an enclosing structure is provided which embraces the base, the side and end walls furnished by panels **15** and **14** and the end members **16**. The latter in common with the base may conveniently be formed of wood.

Now, with a view to providing a roofing structure and to also retain panels **15** against displacement, strips **19** conveniently of metal are disposed upon the upper edges of the panels **15** and extend longitudinally of the same. These strips as especially shown in Figs. 3 and 5, are bent as at **20** to receive the lower edges of roofing panels or strips **21**. The latter are conveniently formed of glass as afore described. The members **19** extend inwardly and upwardly to provide portions **21'** bearing against the upper edges of panels **15**. Openings **22** may be formed in the inner faces of these members to receive the hook-shaped ends of retaining rods **23** having springs **24** attached to their lower ends. The lower ends of these springs are in turn preferably secured to the inner faces of the side walls **11** providing the main base or pan structure.

Accordingly, rods **23** will tend to draw members **19** downwardly. Therefore, these members will firmly seat upon the upper edges of panels **15**. So seated, they will retain the panels against displacement from the grooves formed in the upper edge of the pan and into which the panel edges extend. Additionally, a stable structure will be furnished involving the channelled portions **20** such that the lower edges of strips **21** may be received and supported within these channels. As shown, the lower faces of the two strips **21** adjacent their end edges may bear against the upper edges of members **16** to be supported thereby. The adjacent upper edges of strips **21** are conveniently enclosed by a ridge strip **25** which is formed with openings in line with end members **16** and through which detent or retaining elements **26** may extend.

Thus, with these parts assembled a unitary and rugged structure is presented. The ventilation of the interior is assured by pivoted dampers **27** which obstruct and control air flow through openings **18**. These dampers may be controlled by thermostatic strips **28** so that, according to the dry bulb temperature prevailing, the dampers will open automatically under predetermined conditions. The bed of material (not shown) disposed within the pan or base portion may be maintained under proper moisture conditions preferably by providing a loop-shaped perforated pipe **29** which extends into the zone of that base and projects through one of the side walls of the same. At its outer end this pipe may terminate in a funnel portion **30** through which water may be distributed.

In order to maintain a proper temperature condition on the part of the plant bed an electrical resistance strip **31** is secured to the side walls of the base or pan and also to the upper face of layer **12** if the latter be employed. A flow of current through this strip is preferably controlled by a thermostat housed within a casing **32**. Leads may also extend from this casing to energize a socket which mounts an electric light bulb **33**. In this manner the interior of the enclosure is adequately illuminated. Current supplying leads **34** extend to a point beyond the structure; it being understood that there is conveniently associated with the thermostat within casing **32** an ad-

justment provision such that the temperature within the structure may be maintained at any desired point.

As will be appreciated the units of this structure may readily be assembled and connected to each other. So connected, they will remain in assembled condition free from any probability of displacement or collapse. When the user desires to obtain access to the interior this may readily be done by, for example, detaching the ridge strip 25 and removing one or both of the panels 21. Otherwise, interior conditions are maintained by the heating element or strip 31 and the dampers 27. As afore brought out, adequate moisture may be supplied through pipe 29.

Figs. 6, 7 and 8 illustrate an alternative form of structure which in certain respects is preferred over that shown in the earlier views. The same reference numerals have wherever practicable been employed to indicate corresponding parts. However, in these views it will be observed that corner pieces 35 preferably of metal are secured to the sides and the base of the bottom tray by, for example, screws 36. The length of the side and end pieces 11 is such that spaces are provided for accommodation of corner pieces or posts 37. The latter are grooved to accommodate the end and side panels 14 and 15. With the structure otherwise substantially identical to that heretofore described it is apparent that after the roof assembly and side glasses have been removed the corner pieces or posts may be withdrawn. In this manner it is feasible to furnish a collapsed structure which may be compactly packaged.

Also, there may be supported upon the base 10 a panel 38 of suitable material which is conveniently notched as at 39. The resistance strand 40 is coiled around this panel and disposed within the notches. In this manner a unit is furnished which may be exteriorly assembled and then placed within the tray or base portion of the structure. It will not be necessary to secure the resistance strand to the side walls of that structure as in the earlier figures.

Also, if desired a moisture distributing pipe 41 may be extended through the end pieces 16. In that position it will be substantially above the soil-receiving portion of the structure. This pipe may be formed with rows of perforations 42 and 43. The individual perforations in the different rows are conveniently disposed in staggered relationship. With pipe 41 being rotatable it will be feasible to direct water introduced through funnel 30 in virtually any desired direction to reach every area of the soil surface.

Thus, among others, the several objects of the invention as afore noted are achieved. Obviously numerous changes in construction and rearrangement of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. A housing structure including in combination a base, walls secured thereto and extending upwardly therefrom to provide a pan, posts projecting upwardly from said pan adjacent the ends thereof and formed with grooves in their vertical edges, transparent panels slidably disposed in said grooves and bearing against the upper edges of said walls, metallic strips supported upon the upper edges of a pair of spaced panels and extending beyond the outer face of the latter, channel portions formed in the external parts of said strips and opening in an upward and inward direction and transparent roofing panels having their lower edges extending into said portions and projecting upwardly and inwardly therefrom to be disposed adjacent each other at their upper edges.

2. A housing structure including in combination a base, walls secured thereto and extending upwardly therefrom to provide a pan, posts projecting upwardly from said pan adjacent the ends thereof and formed with grooves in their vertical edges, transparent panels slidably disposed in said grooves and bearing against the upper edges of said walls, metallic strips supported upon the upper edges of a pair of spaced panels and extending beyond the outer face of the latter, channel portions formed in the external parts of said strips and opening in an upward and inward direction, transparent roofing panels having their lower edges extending into said portions and projecting upwardly and inwardly therefrom to be disposed adjacent each other at their upper edges and resilient connecting members attached to said strips adjacent the inner edges of the latter and also to said pan to maintain said strips in firm contact with the upper edges of the panels against which they bear.

3. A housing structure including in combination a base, walls secured thereto and extending upwardly therefrom to provide a pan, posts projecting upwardly from said pan adjacent the ends thereof and formed with grooves in their vertical edges, transparent panels slidably disposed in said grooves, the upper edges of said walls being also formed with grooves to receive the lower edges of said panels, metallic strips supported upon the upper edges of a pair of spaced panels and extending beyond the outer face of the latter, channel portions formed in the external parts of said strips and opening in an upward and inward direction and transparent roofing panels having their lower edges extending into said portions and projecting upwardly and inwardly therefrom to be disposed adjacent each other at their upper edges.

4. A housing structure including in combination a base, walls secured thereto and extending upwardly therefrom to provide a pan, posts projecting upwardly from said pan adjacent the ends thereof and formed with grooves in their vertical edges, transparent panels slidably disposed in said grooves and bearing against the upper edges of said walls, metallic strips supported upon the upper edges of a pair of spaced panels and extending beyond the outer face of the latter, channel portions formed in the external parts of said strips and opening in an upward and inward direction, transparent roofing panels having their lower edges extending into said portions and projecting upwardly and inwardly therefrom to be disposed adjacent each other at their upper edges and end members supported adjacent the upper ends of said posts and having edge portions supporting said roofing panels.

5. A housing structure including in combination a base, side walls secured thereto and extending upwardly therefrom to provide a substantially rectangular pan, posts extending upwardly from said pan adjacent the corners thereof and formed with grooves in their vertical edges, a pair of transparent panels slidably disposed in said grooves adjacent opposite side edges of said pan and bearing against the upper edges of said walls, a second pair of transparent panels intervening said first-named panels and similarly mounted between said posts, the upper edges of said second pair extending above the edges of said first-named pair, end members supported upon the upper edges of said second panel pair and providing apex portions, transparent roofing panels resting upon the upper edges of said end members and converging towards each other to provide a ridge portion and means for detachably connecting said roofing panels in such position.

6. A housing structure including in combination a base, walls secured thereto and extending upwardly therefrom to provide a pan, the ends of said walls being spaced to provide sockets, posts having their lower ends disposed in said sockets, said posts extending upwardly from said pan and formed with grooves in their vertical edges, side panels bearing within said grooves and against the upper edges of said panels and extending beyond the outer face of the latter, channel portions formed in the external parts of said strips and opening in an upward and inward direction and transparent roofing panels having their lower edges extending into said portions and projecting upwardly and inwardly therefrom to be disposed adjacent each other at their upper edges.

7. A housing structure including in combination side

walls, supporting members associated with the upper edges of said side walls and comprising strips presenting surfaces bearing against the upper edges of said walls, roofing panels, channel portions opening in an upward direction beyond the outer faces of said side walls and forming parts of said strip, said portions receiving the lower edges of said roofing panels and spring-retracted means secured to said strips and disposed adjacent the inner faces of said side walls to bear against the upper edges of the latter and be retained against displacement.

8. A housing structure including in combination side walls, supporting members associated with the upper edges of said side walls and comprising strips presenting surfaces bearing against the upper edges of said walls, roofing panels, channel portions opening in an upward direction beyond the outer faces of said side walls and forming parts of said strip, said portions receiving the lower edges of said roofing panels, end walls intervening said side walls, end members supported upon said end walls and said members providing edge portions to engage and support the roofing panels extending into said channels and said end members being formed with grooves in their lower edges into which the upper edges of said end walls extend.

9. A housing structure including in combination side walls, supporting members associated with the upper edges of said side walls and comprising strips presenting surfaces bearing against the upper edges of said walls, roofing panels, channel portions opening in an upward direction beyond the outer faces of said side walls and forming parts of said strip, said portions receiving the lower edges of said roofing panels, end walls intervening said side walls, end members supported upon said end walls and said members providing edge portions to engage and support the roofing panels extending into said channels, said end members being formed with grooves in their lower edges into which the upper edges of said end walls extend, a ridge unit extending between said members and releasable coupling means mounted by said members and engaging with said unit to detachably retain the latter.

10. A housing structure including in combination a base presenting upwardly extending grooved edges, corner posts supported adjacent said base and formed with grooves extending in the direction of the latter, side and end panels of transparent material extending into the grooves of said corner posts and base, means resiliently retaining certain of said panels within said base grooves, channel portions forming a part of said last-named means and said channel portions receiving the lower edges of roof panels extending between said side walls.

References Cited in the file of this patent

UNITED STATES PATENTS

865,590	Horton	Sept. 10, 1907
974,233	Brewer	Nov. 1, 1910
1,375,402	McAvoy	Apr. 19, 1921
1,702,340	Gates	Feb. 19, 1929
2,291,712	Hatton	Aug. 4, 1942

FOREIGN PATENTS

77,087	Switzerland	July 16, 1918