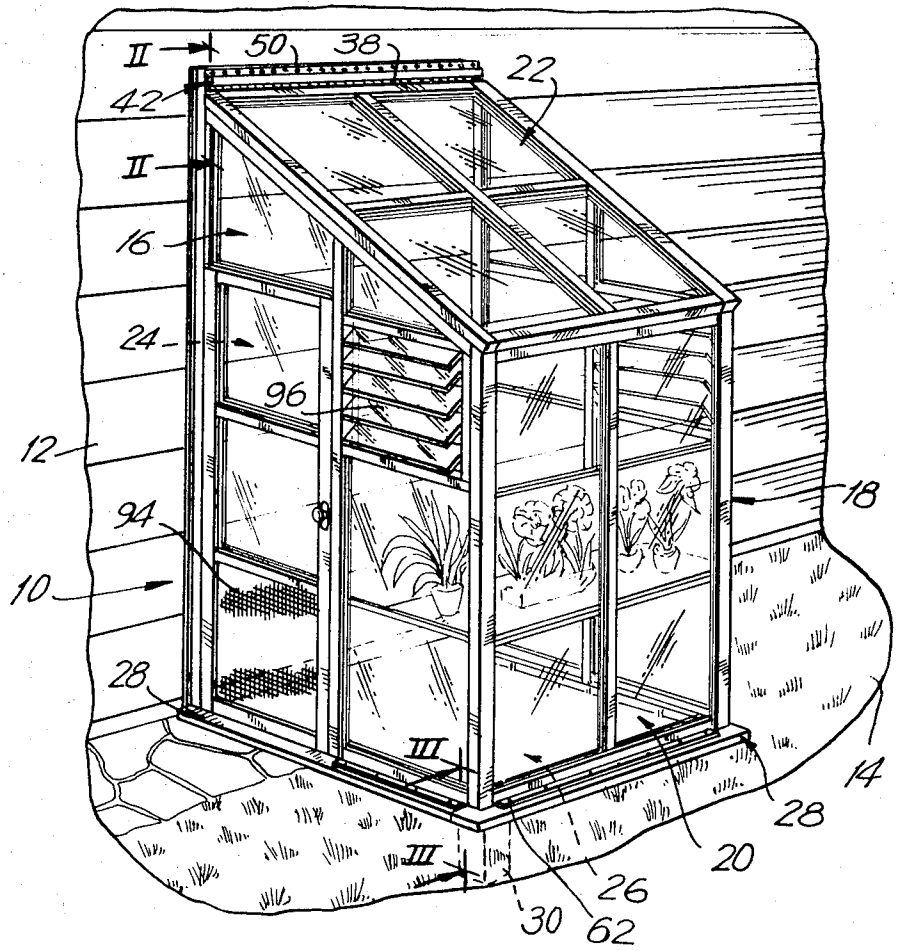
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GREENHOUSE CONSTRUCTION

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FIG. 1



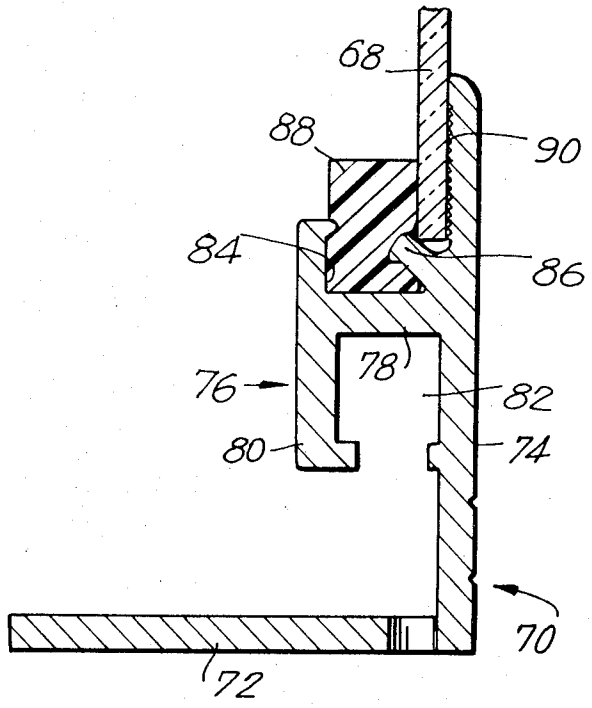


FIG. 4

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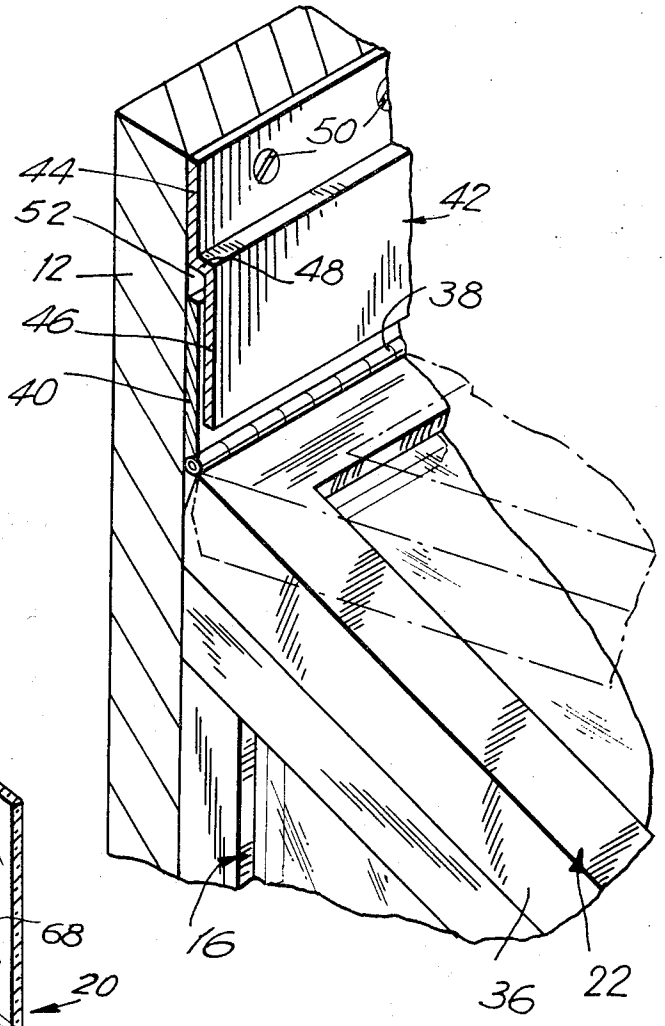
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GREENHOUSE CONSTRUCTION

Filed April 17, 1969 2 Sheets-Sheet 2

FIG. 2



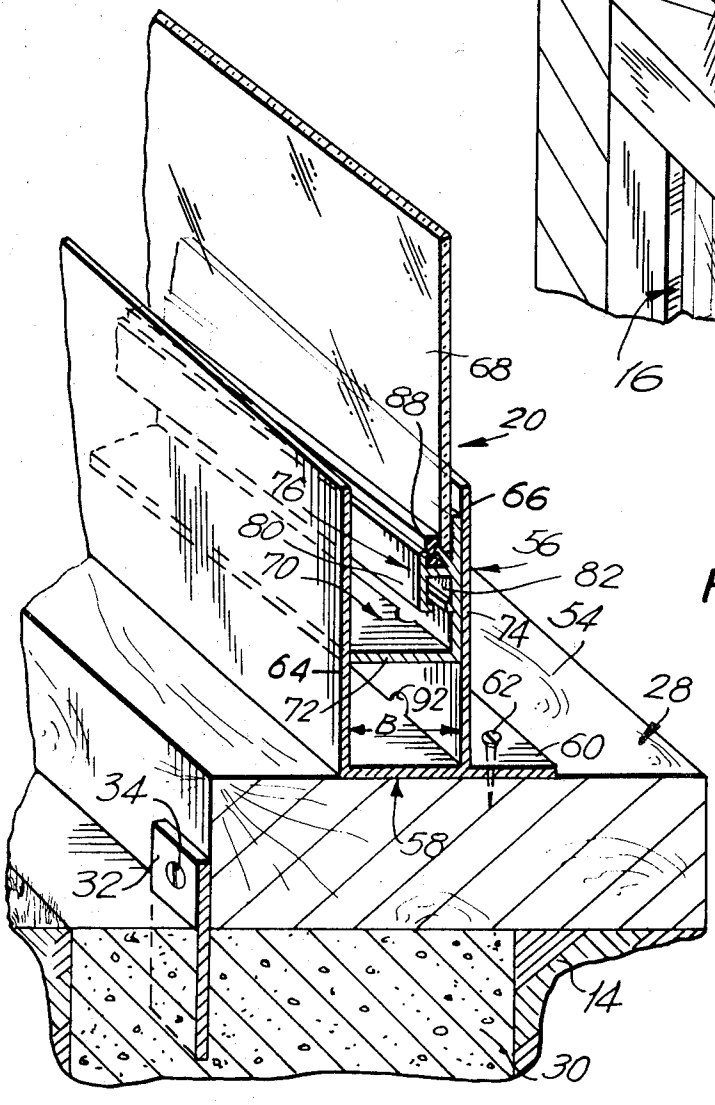


FIG. 3

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GREENHOUSE CONSTRUCTION

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U.S. Cl. 52—66 6 Claims

ABSTRACT OF THE DISCLOSURE

A greenhouse construction is provided which is attachable to a supporting structure such as a house or the like. The greenhouse construction is portable and readily assembled and to this end is foundationless or substantially so. To facilitate assembly of the construction there is provided a demountable framework which is received by expansion-type receptacles which accommodate deviations from proper alignment and which furthermore accommodate expansion and contraction due to changes in temperature and so forth. A particular design is provided for the framework members such that glass panes can be readily mounted at the place of final assembly.

BACKGROUND

This invention relates to greenhouse constructions which are readily assembled from prefabricated parts and which can be mounted to accommodate variances in tolerances and dimensions and the like.

The invention moreover provides for an assembly operation which can be performed in a relatively short period of time thereby rendering the construction of the invention suitable for home use and for purchase and use by persons who have no special mechanical skills.

Greenhouses are known which consist of a framework in which are mounted glass panes and which provide for an enclosure within which the atmospheric conditions may be controlled. These greenhouses usually consist of a large number of parts which must be precisely brought together and connected and which require a reasonable amount of mechanical ability for purposes of assembly.

Still other greenhouses are known which are relatively small in size and which may be mounted on a standing structure such as by being attached to enclose a window of a dwelling or the like.

It is an object of the invention to provide an improved greenhouse construction which in turn provides for an enclosure of substantially unlimited size and which construction is of a portable nature and can be readily assembled or dismounted.

Another object of the invention is to provide an improved greenhouse construction involving the use of elements wherein glass panes can be readily assembled and mounted at the site of assembly of the greenhouse.

Yet another object of the invention is to provide an improved greenhouse construction which facilitates accommodation of irregularities in the ground on which the greenhouse is to be mounted.

Still another object of the invention is to provide an improved greenhouse construction which automatically provides allowances for angular deviations of the walls to which such greenhouses will be applied.

Yet another object of the invention is to provide an improved framework for a greenhouse of the aforenoted type in which convenient provisions are made for the drainage of condensed moisture.

SUMMARY OF INVENTION

To achieve the above and other of the objects of the invention, there is provided a greenhouse construction

comprising a framework having at least one open side and an open bottom and expansion means to engage the framework adjacent the open side and bottom to support the framework on the ground and to connect the framework to an adjacent structure.

Said expansion means may include at least one horizontal channel adapted to support the framework at the bottom thereof, the channel opening in upward direction and the framework including at the lower extremity thereof a member which engages in sliding relationship in the channel and being thereby adapted to accommodate displacements between the framework and channel.

In accordance with one feature of the invention, the aforesaid member may be constituted by a foot extending across the internal breadth of the channel, there being means connected to the foot to support a pane of glass and spline means adjacent the pane of glass to hold the same in position relative to said foot.

According to another feature of the invention, the framework may attach a hinged top and a projection extending upwardly therefrom, the expansion means including an expansion strip mountable on the aforesaid adjacent structure to slidably accommodate the above noted projection.

In accordance with the invention, the channel may be supported, for example, on a wood or concrete base, there being moreover provided a concrete anchor sunk into the ground and in which is imbedded a connecting member which is attached to the aforesaid base.

According to a further feature of the invention, the framework may consist of extrusions including the aforesaid foot from which extends a flange to which is attached a T-shaped member extending outwardly from the flange above the foot and defining upper and lower compartments with an angular member being provided which extends from the flange into the upper compartment to subdivide the same into two sections, one of which receives the pane of glass and the other of which receives an elongated plastic spline member which holds the pane against the flange.

In accordance with still further features of the invention, the framework may include a hinged door and a louvre and other such structural members as will ordinarily be found in greenhouse constructions of substantially higher cost.

DRAWING

FIG. 1 is a perspective view of a greenhouse construction provided in accordance with the invention, the construction being shown attached to an adjacent structure such as the side of a dwelling;

FIG. 2 is a cross-sectional view, taken along line II—II of FIG. 1;

FIG. 3 is a cross-sectional view, taken along line III—III in FIG. 1; and

FIG. 4 is a cross-sectional view of a framework element as employed in the embodiments of FIGS. 1–3, a pane of glass and a spline member being shown in operative relationship therewith.

DETAILED DESCRIPTION

A greenhouse construction of the invention is generally indicated at **10** in FIG. 1. In this form it has already been assembled and mounted on a wall **12** of a dwelling (not shown in entirety) adjacent which is a tract of ground **14**.

As is well known, the angle between the wall **12** and the ground **14** is preferably a right angle for purposes of construction. However, since the ground is usually graded to provide for drainage, it seldom occurs that the wall **12** and the ground **14** are in perfect perpendicular relationship with one another.

In any event, even should such perpendicular relationship obtain at a given time, this relationship would soon change due to atmospheric conditions involving the presence of moisture and temperature variations and furthermore due to the fact that the ground is not a simple inert mass which retains one surface configuration for an extended period of time.

The invention thus provides a construction which enables those possessing no particular mechanical skills to erect a greenhouse construction serving all of the known functions of greenhouses, while at the same time accommodating the imperfections of environment noted hereinabove.

In general, a greenhouse construction of the invention may consist of sides **16**, **18**, and **20**, all of which are closed by appropriately mounted panes of glass as will be discussed hereinafter. The greenhouse may further consist of a hinged top **22**. One side, such as indicated at **24**, will be an open side and the bottom **26** of the greenhouse will also preferably be open for purposes of economy and ease in installation. It will be noted that the open side **24** is effectively closed off from ambient weather conditions due to the fact that this side abuts the wall **12** of the aforesaid dwelling.

The lowermost extremities of the sides **16**, **18** and **20** are supported on beams **28**. These beams may be readily placed into position as will be indicated in further detail hereinbelow. These beams may be wood beams made from a material such as redwood or in the alternative may be of a concrete or plastic and the like.

As appears in FIG. 3, there may be sunk into the ground one or more concrete anchors **30** in which are imbedded metal strips or sticks **32** connected by means such as bolts **34** to the side edge of the base on either the inside or the outside of the greenhouse construction.

The hinged top **22** is shown in greater detail in FIG. 2. It consists of a framework **36** on which is mounted a hinge **38** from which extends a projection **40**. The projection **40** is accommodated in an expansion member **42** which is generally of Z-shape and which consists of arms **44** and **46** connected by a transverse spacing member **48**.

The expansion member **42** is connected by a plurality of bolts **50** or the like to the wall **12** with respect to which it defines a slot **52** in which the projection **40** is slidably accommodated.

The connection and support of the lower extremity of the framework is illustrated in FIG. 3 wherein is seen the above noted base **28**.

To the top **54** of the base is connected an expansion member **56** consisting of a U-shaped channel **58** having a flange **60** extending laterally therefrom. The flange **60** is connected to the base **28** by means of bolts **62** or the like with the walls **64** and **66** of the U-shaped channel extending upwardly therefrom. The U-shaped channel has an internal breadth B which determines corresponding dimensions of the framework as will be shown.

A pane **68** of glass or the like which constitutes part of one side of the greenhouse construction is supported in a framework element **70**, the details of which will be described. This framework element, it should be noted, comprises a foot **72**, the breadth of which corresponds to the breadth B of the U-shaped channel **58** and when the foot is slidably accommodated in said U-shaped channel the U-shaped channel is obturated thereby.

FIG. 4 illustrates the details of the framework element **70** which, as noted above, includes the foot **72**. Extending upwardly from the foot **72** is a flange **74** having perpendicular relationship therewith.

A T-shaped element **76** extends outwardly from flange **74** and is positioned above the foot **72**. The T-shaped member **76** includes a web **78** and a cross member **80** which defines with the flange **74** two compartments **82** and **84**.

An angularly disposed member **86** extends from the intersection of the flange **74** and web **78** into the compartment **84** at substantially a 45° angle. This divides the compartment **84** into two sections, in one of which is accommodated the pane **68** and in the other of which is accommodated an elongated plastic spline element **88**.

The flange **74** is provided at its upper extremity with a roughened surface constituted for example by a multitude of small teeth such as indicated at **90**. When the pane **68** is installed in the compartment **84** a rubber cement or the like will be applied to the roughened surface **90** and will serve to hold the pane in position.

To supplement the strength of the bonding material holding the pane **68** in position, the spline element **88** is longitudinally displaced with a sliding motion into the appropriate section of the compartment **84** and this spline element serves not only to further support the pane **68** but moreover to obturate the compartment **84** and to give the mounting of the pane a finished appearance.

The U-shaped channel **58** provides an important feature of the invention in addition to accommodating deviations from perfect dimensions as will be discussed hereinafter. This additional feature takes the form of the opening **92** illustrated in FIG. 3. Opening **92** provides for the drainage of condensed moisture and the like from the interior of the greenhouse construction. Thus the U-shaped channel **58** provides for the double function of drainage and accommodation of dimensional deviations during assembly.

As will be understood from the above description, the bottom perimeter of the framework is slidingly accommodated in one or more U-shaped channels **58**. It will also be understood that the vertical peripheries bonding the open side **24** are accommodated in like expansion joints. Similarly the top projection **40** of the greenhouse construction is accommodated in an expansion element **42**.

In view of the provision of these expansion elements or joints, the need for assembling the overall construction and framework to precise dimensions is obviated. As a matter of fact, FIG. 3 illustrates a case in which the foot **72** of the framework element **70** is at one lateral extremity thereof spaced before the bottom of the U-shaped channel **58**, there being angular displacement therebetween due to the fact that the ground is not perfectly perpendicular to the wall to which the side of the greenhouse construction has been attached.

From the above it will be noted that a greenhouse construction of the invention comprises a framework having one open side and an open bottom, there being provided expansion means to engage the framework adjacent the open side and bottom to support the framework on the ground and to connect the same to an adjacent structure such as a wall of a dwelling. The open bottomed construction avoids the need for the fabrication of a base and at the same time facilitates the utilization of an expansion connection to accommodate deviations in the profile of the ground and its relationship to the said adjacent structure.

It will be noted in FIG. 1 that greenhouses of the invention may be easily provided with doors such as indicated at **94** and louvres such as indicated at **96**, such additional features being readily accommodated into the framework construction of the invention without interferring with the expansion accommodation made with respect to the framework.

It will also be appreciated from what has been stated above that the bottommost expansion device employed to support the lower extremity of the framework will include, for example, a horizontal channel opening in an upward direction and accommodating the insertion of a lower framework element having a channel obturating foot with a breadth corresponding to the internal breadth of the channel.

It will also be appreciated from what has been stated hereinabove that the greenhouse constructions of the invention are readily glazed, the panes of glass being easily insertable into the framework elements described above

and being held in position by a bonding agent as well as by a slidably insertable spline element.

There will now be obvious to those skilled in the art many modifications and variations of the construction set forth above. These modifications and variations will not, however, depart from the scope of the invention if defined by the following claims.

What is claimed is:

1. A greenhouse construction comprising a framework having an open side and bottom, and expansion means to engage the framework adjacent the open side and bottom to support the framework on the ground and to connect the framework to an adjacent structure, said expansion means including at least one horizontal channel adapted to support the framework at the bottom thereof, said channel opening in upward direction, said framework including at the lower extremity thereof a member engaging in sliding relationship in said channel and adapted to accommodate displacement between the framework and channel, said member including a foot extending across the internal breadth of the channel, means connected to said foot to support a pane of glass, and spline means adjacent the first said means to hold the pane in position.

2. A construction as claimed in claim 1 wherein said framework includes a hinged top and a projection extending upwardly from the top, said expansion means including an expansion strip mountable on said adjacent structure to slidingly accommodate said projection.

3. A construction as claimed in claim 2 wherein said strip is a generally Z-shaped member.

4. A construction as claimed in claim 2 comprising a solid base below and supporting said channel, a concrete anchor sunk into the ground, and a connecting member connecting the base to said anchor.

5. A construction as claimed in claim 2 wherein said means collectively include a flange extending upwardly from said foot, a T-shaped member extending outwardly from the flange above said foot and defining upper and lower compartments with said flange, an angular member extending from the flange into the upper compartment to subdivide the latter into two sections one of which receives said pane of glass, and an elongated plastic spline member in the other section to hold the pane against the flange.

6. A construction as claimed in claim 2 wherein said framework includes a hinged door in one side thereof.

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52—79, 209 293, 482, 627