

Feb. 18, 1947.

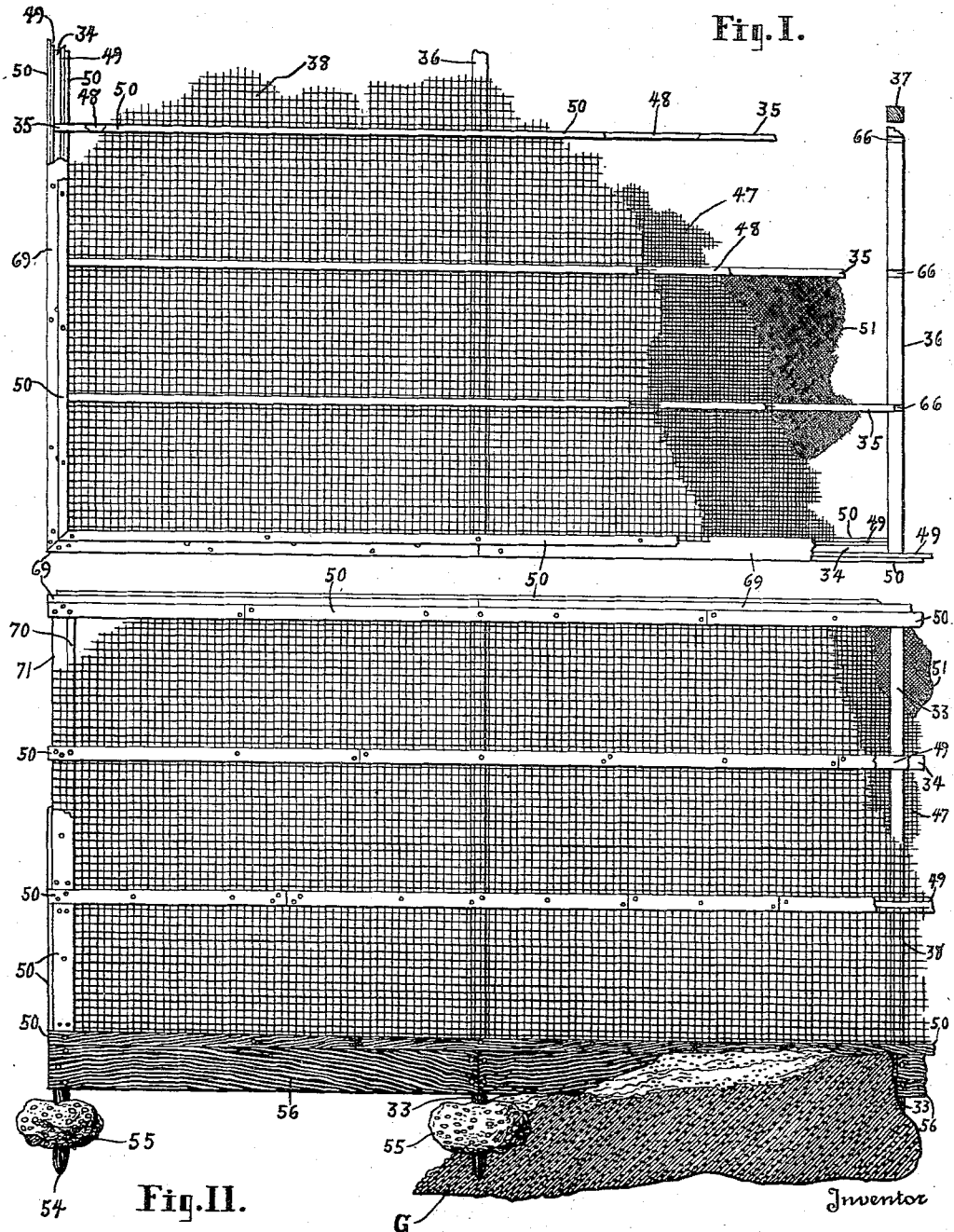
M. H. MEAD

2,416,037

INCLOSURE FOR EDUCATING SILKWORMS

Filed Jan. 22, 1942

4 Sheets-Sheet 1



Marvin H. Mead

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Fig. III.

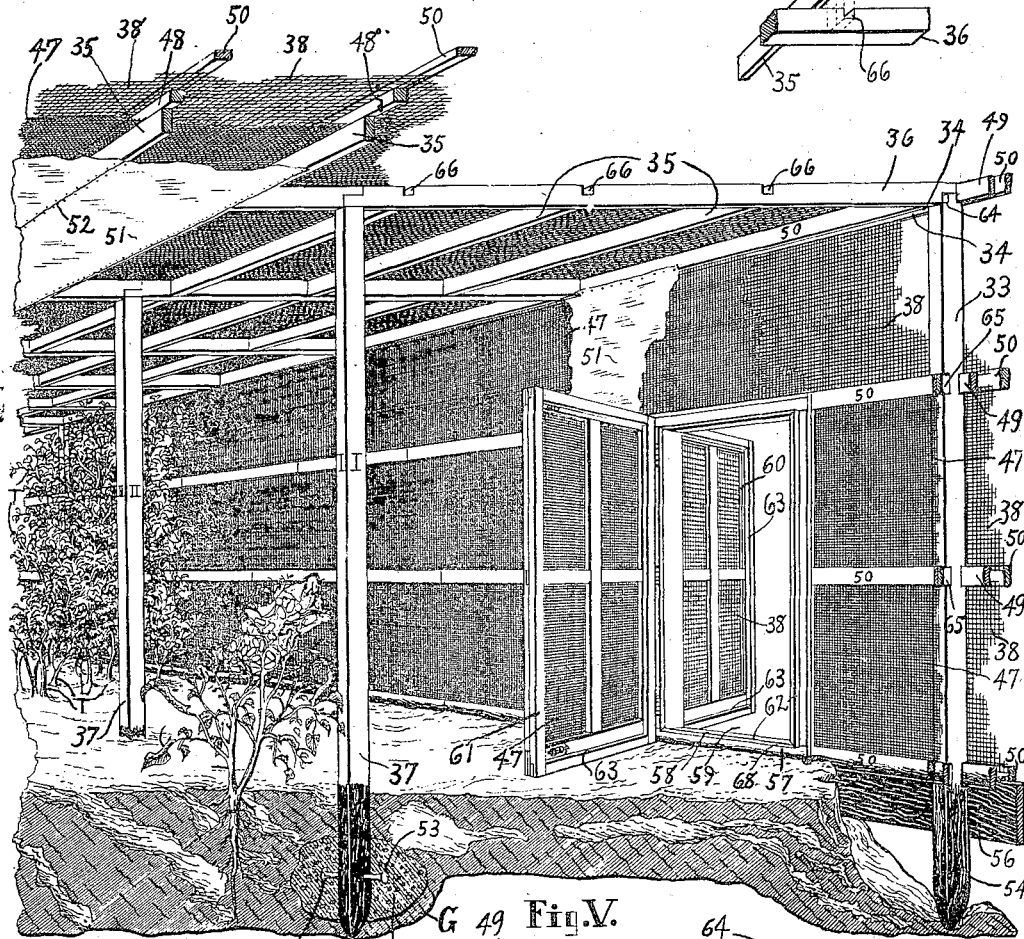


Fig. VI.

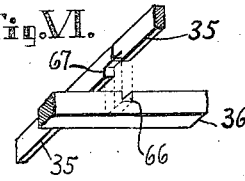


Fig. IV.

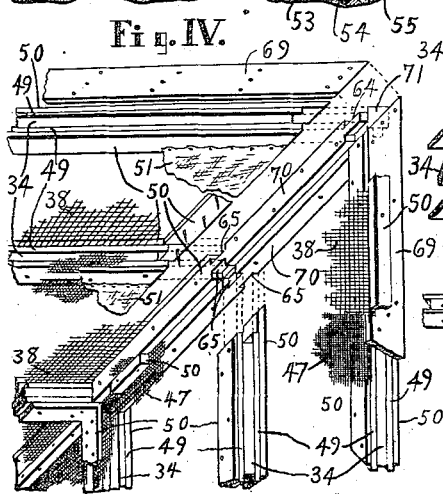
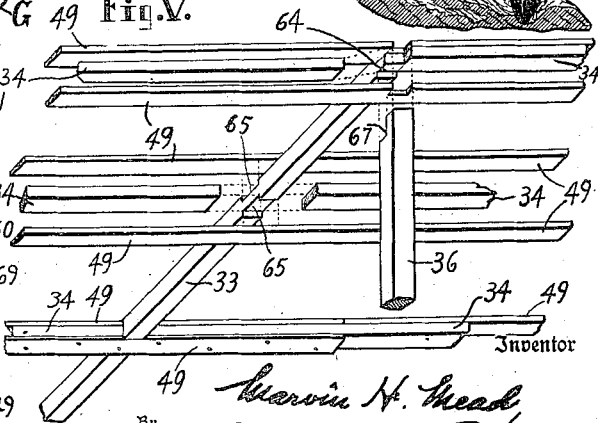


Fig. V.



Inventor
Marvin H. Mead
 By *Alexander C. Proufit*
 Attorney

Feb. 18, 1947.

M. H. MEAD

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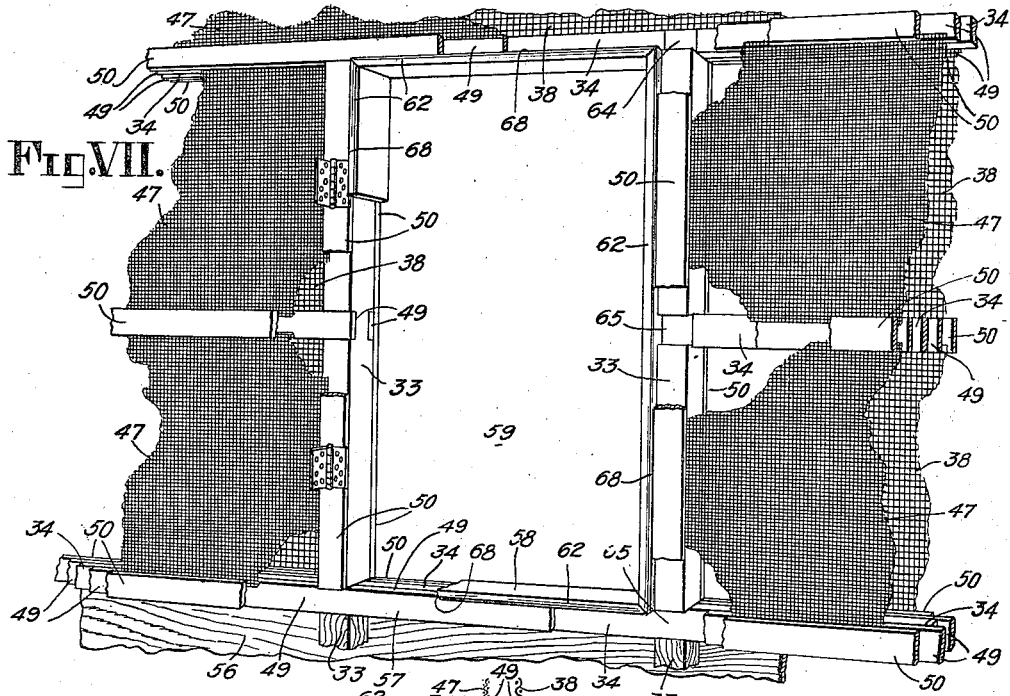


FIG. VII.

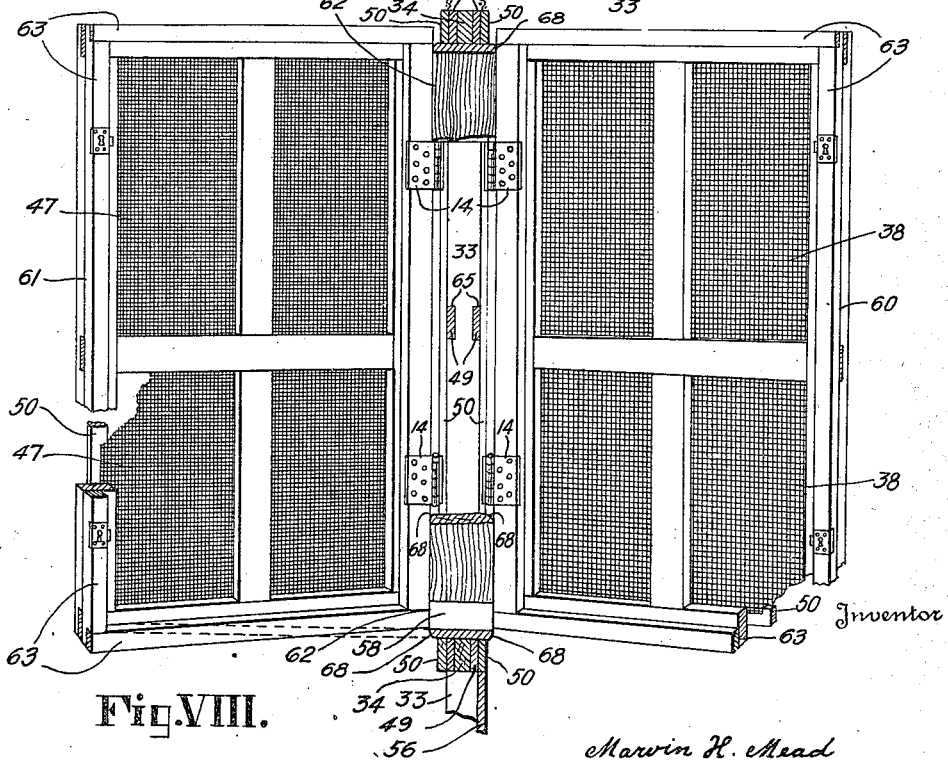


FIG. VIII.

Marvin H. Mead

Inventor

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M. H. MEAD

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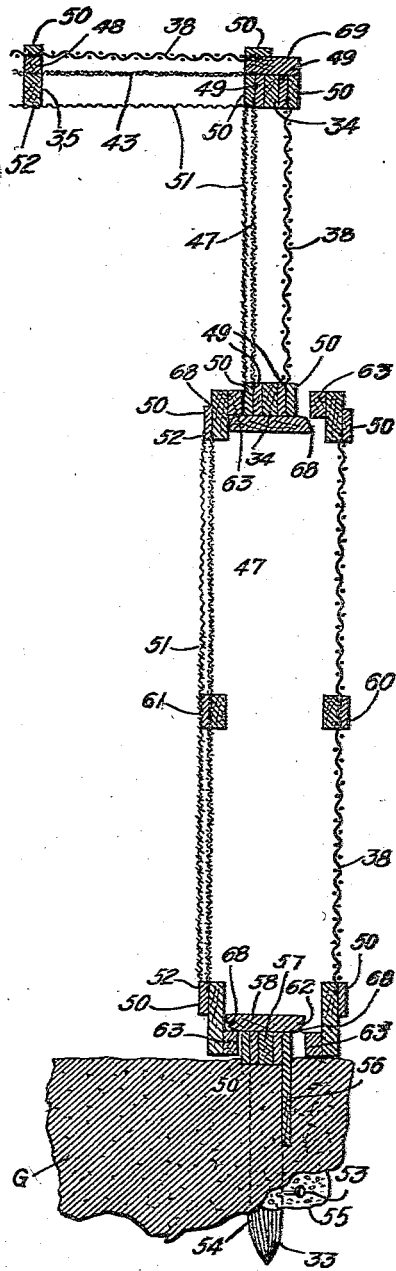


Fig. IX.

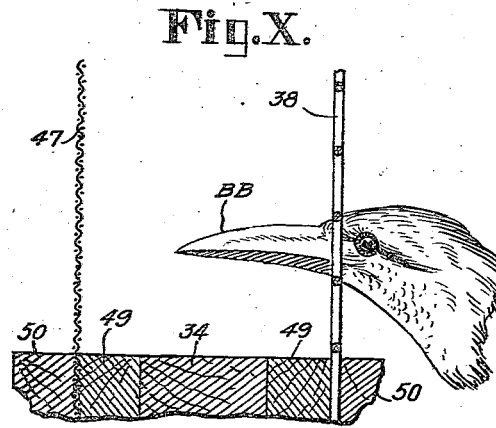


Fig. X.

Inventor

Marvin H. Mead

UNITED STATES PATENT OFFICE

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INCLOSURE FOR EDUCATING SILKWORMS

Marvin H. Mead, Savannah, Ga., assignor of one-half to Constance V. Mead, Savannah, Ga.

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4 Claims. (Cl. 20-1)

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This invention relates to agriculture, especially to husbandry, and more particularly to sericulture, and an important object of my invention is to provide an improved apparatus for, the "education" of the filament producing Lepidoptera, of which the "silkworm" of commerce is the most conspicuous example at present, the term "education" being used herein as a conveniently brief designation for the treatment of the individuals of this species throughout their life history, including their various metamorphoses, rather than simply in the conventionally more restricted sense where the term is applied to the larvae subsequent to hatching and eventuating in the formation of the cocoon, the term as used herein being not limited theretofore to any narrow technical significance.

I have made the discovery that the silk filament produced under conditions which involve increased effort and initiative upon the part of these larvae is of superior strength, brilliance and regularity of diameter, so that the entire length of filament in a cocoon can be utilized, instead of only selected parts thereof, as in the past, and thus it is now only desirable to provide for such enclosure of the trees as will secure protection of the silkworms from birds, predatory insects, and the smaller animals, leaving ample room for caretakers.

From the following disclosure, it will be seen clearly that my invention provides a novel, sturdy and completely insect-proof, vermin-proof and enemy-excluding structure, and is of general utility for screen doors, aside from the particular use for it in the agricultural enclosure illustrated.

Other objects and features of the invention will appear as the description of the now-preferred embodiment of the invention selected for illustration herein progresses.

In the accompanying drawings, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings, in which:

Fig. I is a fragmentary horizontal view of one of the four outside corners of the top, showing detail construction of assembled parts;

Fig. II is a fragmentary vertical view of one of the four corners of the outside walls, from the top to the under ground construction of the inclosure;

Fig. III is a perspective view of a preferred form of apparatus for carrying the invention into effect;

Fig. IV is a fragmentary detail view in perspective at an angle of 45 degrees above one of the

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four corners of the inclosure with the top torn away to show walls on one side secured to the corner upright while the other is separated to show their related parts;

Fig. V is a fragmentary detail view in perspective looking from an elevated viewpoint toward frame parts in course of assembly, and which will be described at length;

Fig. VI is a like view of a joint in course of assembly;

Fig. VII is a fragmentary vertical view in perspective of the doorway with portions of the frame broken away to show detailed construction of the frame surrounding doorway of my novel inclosure for sericulture;

Fig. VIII is a fragmentary detail view of a vertical portion in perspective of door frame with the outside door hinged to the outside door frame also the inside door hinged to the inside of door frame with parts of construction broken away to show frame work formation;

Fig. IX is a vertical cross section drawn through the tops of the inclosure and the outer walls and the open net work of the panels of the doors, and sill, and construction below the surface of the ground;

Fig. X is a fragmentary detail view of a vertical cross section of spaced coarse and fine wire fabrics.

The Figs. II, III and V of the enclosure having the reference character 33 designate an upright studding member, of which portions of three are shown in Fig. III and only a small number is shown in Fig. IV, it being understood that as many will be provided as are required to support the walls which surround the sides of the enclosure and the top thereof, the framework for the top being fabricated of longitudinal members 34 and 35, and cross-pieces 36 shown in Figs. I, III to VI and IX, which receive additional support from other uprights 37, Figs. I and III, the latter being disposed in a series of rows which define aisles within which the attendants may move freely.

An ordinary cardboard box X, as shown in Fig. IX, having within a number of cocoons 45, the male moth M, and the female moth FM, of (*Bombyx mori*) depositing eggs E, on the rough under surface R, of the lid L, the line A, when cut out will produce an egg-holder H, with eggs E.

The composition of the side walls and roof is a factor of the highest importance in securing the above-mentioned exclusion of enemies, and my improved structure includes the provision of an inner fine-mesh wire fabric 47 shown in Figs.

I to IV and VII to X, constructed and arranged to exclude insect enemies, such as wasps, hornets, bugs and spiders, this fabric being secured in place upon the uprights 33 and between the horizontal binder binding strips 49 and 50, Figs. I to V and VII to X; also upon the horizontal frame members 35, Figs. I, III, VI and IX, of the roof by means of strips 48, Figs. I, III and IX, and outer edge horizontal binders 69, Figs. I, II, IV and IX, fastened by nails or screws.

Outside of this inner fine-mesh wire fabric 47, and spaced therefrom at a distance of say four inches on the sides, and two inches on the roof, is a coarse mesh wire fabric 38 shown in Figs. I to IV and VII to X, mounted upon the outside of the uprights 33 and horizontal binders 49 by binding strips 50, Figs. I to IV and VII to X, to be described more at length.

The purpose of so spacing the outer coarse wire fabric 38 from the inner fabric 47 of fine wire shown in Figs. IX and X, is to make it impossible for birds having long beaks BB, and both birds and beasts having long talons, and claws, to reach through the coarse meshes of the outer fabric and tear holes in the inner fabric, thus opening the way for entrance of the insect enemies already mentioned.

It may be desirable, under certain conditions, to provide, within the fine wire mesh fabric, an innermost fabric of non-metallic material 51 as shown in Figs. I to IV and IX, such as cheese-cloth, nailed, or otherwise suitably secured, as at 52, spaced a short distance from the fine wire fabric, shown in Figs. I, II, III and IX thereby providing perfect protection for all kinds of lepidoptera.

In making the enclosure, it will be noted that there need be no waste of fabric, as the wire cloth can be applied from a roll and tacked on for the full length of the roll on the enclosure. The surface of the strips where the wire cloth is being tacked on should be freshly painted, including the binder strips outside the wire cloth. In general, all joints and pieces should be freshly painted immediately prior to their assembly, to protect the wood from decay and termites and the wire cloth from rusting beneath the binder strips.

The underground parts of the enclosure, as shown in Figs. II, III and IX, include the provision of spikes 53 driven into the bottom ends 54 of the uprights 37, the latter being embedded in masses 55 of concrete shown in Figs. II, III and IX, having first been treated with creosote, asphalt or tar, as indicated by the blackened portions in the drawings, similar treatment having been given to the uprights 33 and also to the heavy board 56 in Figs. II, III, VII and IX, serving to prevent burrowing animals inimical to the silkworms from entering; also to prevent decay and the ravages of termites.

Above the board 56, embedded in the ground G as just described, is fastened the sill 57 in Figs. III and VII to IX, and in continuation thereof is fixed the doorsill 58 shown in Figs. III, VII, VIII and IX, of the doorway 59, through which access is gained to the enclosure, and exit therefrom. The doorway can, and preferably will, be closed by an outer door 60 of coarse wire fabric 38 and an inner door 61 of fine wire fabric 47 in Figs. III, VII, VIII and IX, thus completing at the doorway the same protection as that afforded by the wire fabric side walls and roof, already described.

The reference character 62 in Figs. III and VII

to IX, designates a tongue on the door sill so disposed as to co-operate with a lip 63 formed on each of the doors also shown in Figs. III, VIII and IX, the door sill having a bevelled sill edge 68 in Figs. III and VII, to IX, constituting a close joint when the door is closed by means of hinges 14. The lip 63 is shown as extending entirely around each door, Figs. III, VIII and IX.

While the details of framework of the enclosure are susceptible of considerable modification, I have found the following novel construction devised by me to contribute desirably to the sturdiness and tightness of the enclosure for the intended use. Referring first to Figs. III, V, VII and VIII, it will be seen that the upright 33 is provided with notches or horizontal slots 65, outside and inside, to receive the horizontal binder strips 49 shown in Figs. I to V and VII to X, making a desirably flush construction, with the horizontal elements 34 of the frame embraced therebetween in abutting arrangement against the uprights in Figs. III to V and VII to X. Provision is also made of rabbeted tops on the uprights, as indicated at 64 in Figs. III, IV, and V for a similar purpose. The reference character 66 (see Figs. I, III and VI), designates a notch in one of the horizontal supporting beams 36 in Figs. I, III, V and VI, for the reception of the rabbeted ends 67 in Figs. V and VI, of the horizontal frame members 35 in Figs. I, III, VI and IX. The reference numeral 70 in Figs. II and IV designates a split outside upright with rabbeted top 64 and horizontal slots 65 nailed to the plane surfaced corner upright 71 as shown in Figs. II and IV, for the reception of the horizontal elements 34 and the inside and outside horizontal binder strips 49, upon which is secured the fine wire fabric 47 on the inside and the coarse wire fabric 38 on the outside, and held firmly in place between the inside and outside horizontal binder strips 49, and the horizontal binding strips 50.

On top of the inclosure is fastened the fine wire fabric 47 between the upper plane surfaced top of the horizontal binders 49 on the inside of the outer wall, and the weather strips 69 of the top, as shown in Figs. I, IV and IX, and also, between the upper plane surfaced tops of the horizontal frame members 35 and the weather strips 48 in Figs. I, III and IX, upon which is secured the coarse wire fabric 38 between the weather strips 69 and the top outside horizontal binding strips 50 of the outer wall, and between weather strips 48 and the top outside horizontal binding strips 50, above the horizontal frame members 35 shown in Figs. I, III, IV and IX.

The structural arrangements in the construction illustrated in Figs. I to X are noteworthy, contributing as they do to the fabrication of a sturdy structure within which the education of the silkworms can be carried on without molestation by any of these natural enemies, and in the favorable environment of the outer air, where they are strengthened by exposure, just as in their once natural condition.

Having thus illustrated and described my new inclosure for sericulture, I claim:

1. The novel inclosure for growing plants of the class described, having uprights of suitable material supported in the the ground with protecting means inside and outside and around the entire structure, said uprights being provided with rabbeted tops and a series of corresponding slots at uniform distances from each other cut in the outer and inner surfaces of said uprights, and spaced to receive abutting elements horizontally

joined together by horizontal bracebinders passing through the slots and secured to the uprights and elements to produce a tight-joint, and a plane surface outside and inside on which to attach and secure the protecting means of said structure, said inclosure being provided with an opening to be closed by inner and outer doors, said doors having extending lips around each door projecting toward the door casing, and fitting over a projecting tongue member extending beyond the door casing inside and outside including the sill, the doors fitting snugly when closed over the projecting tongue around the door casing to which it is secured, thereby protecting the living contents within said inclosure from external enemies.

2. An inclosure with suitable frame work to which is secured the protecting means throughout containing self-feeding silkworms maintained upon growing plants of the class described, said inclosure having reinforced and braced uprights provided with anchorage set in the ground, and spaced apart in rows and cross rows, composed of outside uprights with slots and rabbeted upper ends connected together by horizontal elements and horizontal brace binders secured in the slots and upon the elements forming continuous bands on the inside and outside upon which to secure the protecting means of the inclosure, with inside uprights to support horizontal supporting beams with rabbeted ends fitting together on top of the uprights and secured thereto and provided with a series of equally spaced notches on the upper surfaces of the horizontal supporting beams across the inclosure in parallel rows, and intersected at right angles by horizontal frame members having rabbeted ends secured in the slots of said horizontal supporting beams producing a rigidly braced framework, with plane top surface for securing thereto the protecting means, to exclude all enemies of the silkworms and their food plants within said inclosure.

3. An inclosure for growing plants for self feeding silkworms and for protecting said silkworms while under education, said inclosure being constructed with anchored outside uprights and inside uprights in formation of rows and cross rows, protected by a preservative means on all sides and ends and by uniting all members before preservative is dry, thereby sealing together all of the separate members to their respective parts, providing plane surfaces on the inside, outside and top of the inclosure, fine wire cloth fastened to the inner surfaces of the outside uprights and the horizontal brace binders and secured in place by horizontal binding strips, and fine wire cloth fastened in like manner to the top with horizontal binder strips thus producing a doubly reinforced inside and top and coarse mesh wire fabric spaced from the inside fine wire cloth by attaching the coarse mesh wire fabric on the outside surfaces of outside uprights and horizontal brace binders and secured by horizontal binding strips, and coarse mesh wire fabric fastened on top of

the inclosure by securing the coarse mesh wire fabric on top of the binding strips and adding thereto additional binding strips making triply strong the structure, the enclosure having a doorway provided with an inner and an outer door, the inner door including fine wire cloth, and the outer door including coarse mesh wire fabric in the manner described the fine wire cloth protecting the silkworms from insects, the coarse wire fabric protecting the fine wire fabric from animals, reptiles and birds.

4. An inclosure for growing plants and self-feeding silkworms of the class described; having an underground supporting, and protecting means, the inclosure being provided with reinforced uprights supporting the top framework inside and the side walls outside to which is secured the protecting means of fine wire cloth and coarse wire fabric, above the ground, spaced apart in equal parallel rows, with the lower ends of said uprights pointed and set below the surface of the ground with projecting spikes as a means to hold thereto a mass of concrete or suitable substance as an anchorage for inside and outside uprights wherever needed to protect the inclosure from destructive winds which could raise the said uprights from the ground, and the said inclosure being provided with an apron of wide boards extending beneath the surface of the ground, and under the outer wall of the said inclosure and secured to the lower ends of outside uprights to form a continuous band beneath the wall of the inclosure, said outside uprights and apron having been treated with preservative before they are put in contact with the ground, to protect them from decay or destruction by burrowing enemies of the silkworms from below the surface of the ground.

MARVIN H. MEAD.

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