(No Model.) 2 Sheets—Sheet 1.

C. H. LEONARD.

PORTABLE HOUSE.

No. 419,859. Patented Jan. 21, 1890.

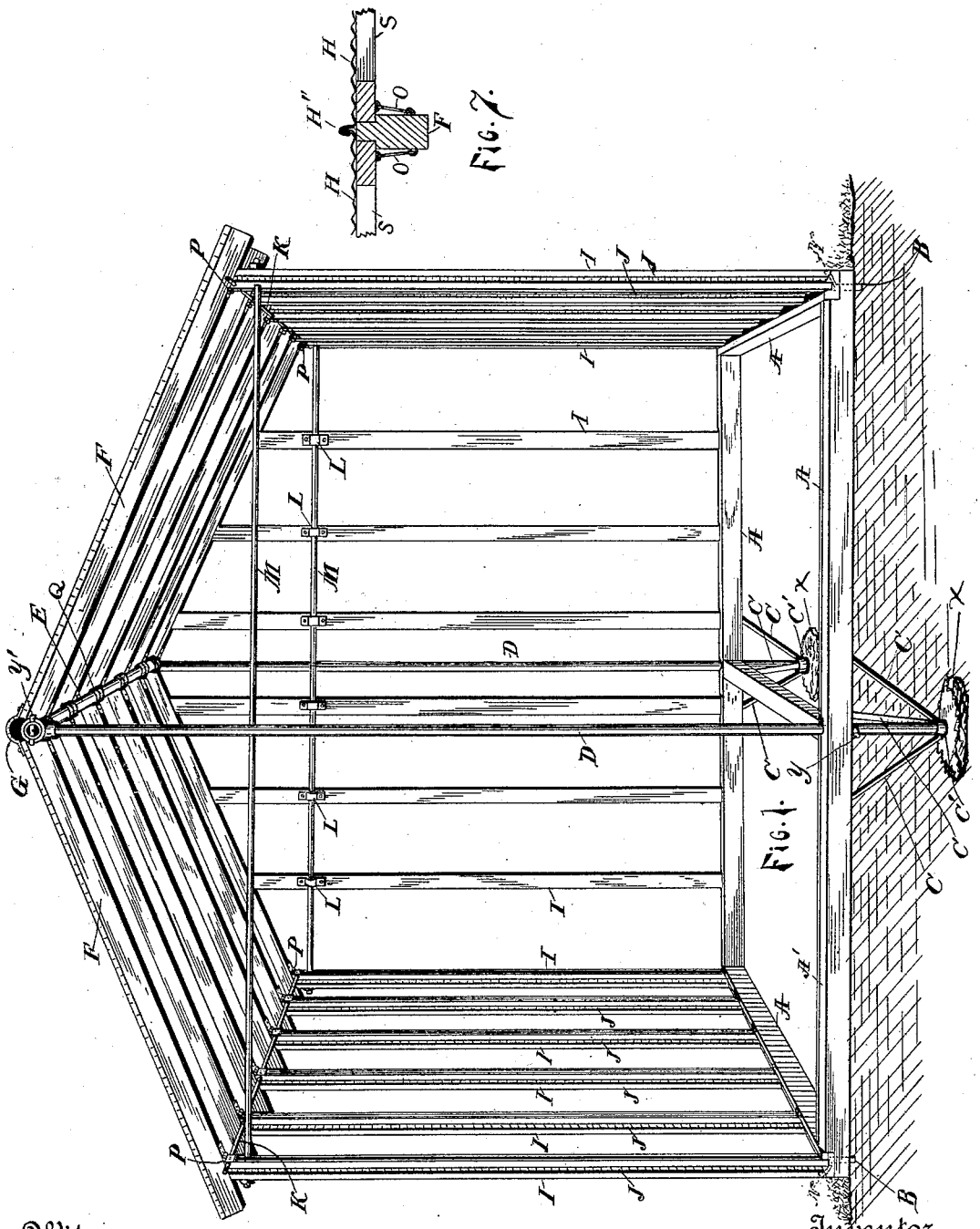

Fig. 1.

Fig. 7.

Witnesses
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Hugh E. Wilson

Inventor
Charles H. Leonard
By His Attorney
Edward Taggart

(No Model.) 2 Sheets—Sheet 2.

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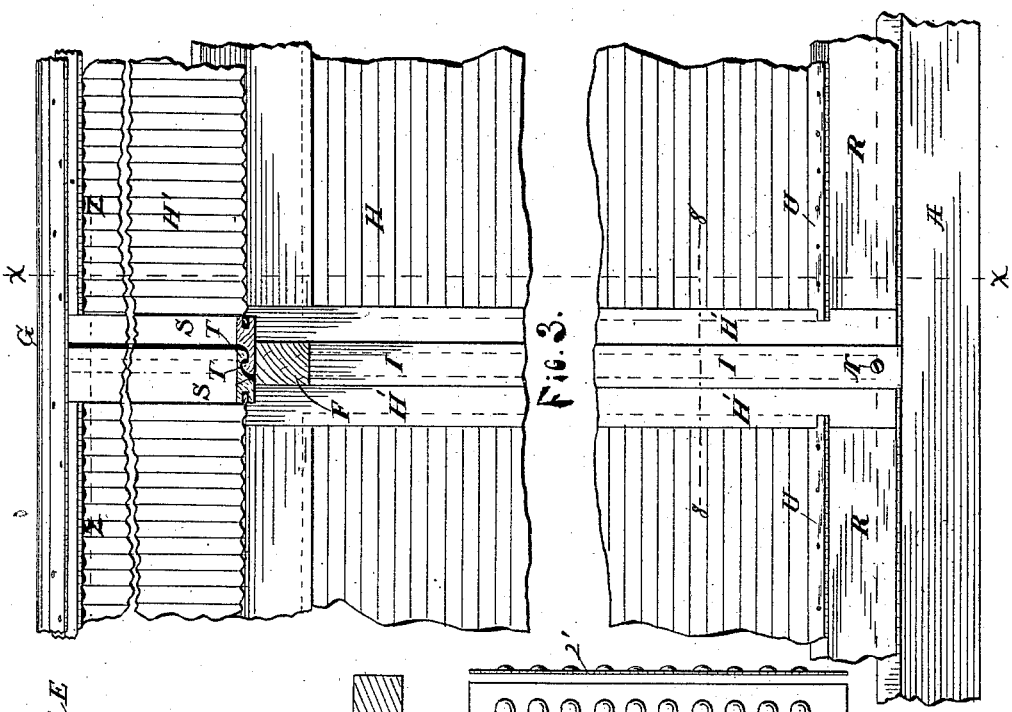

Fig. 3.

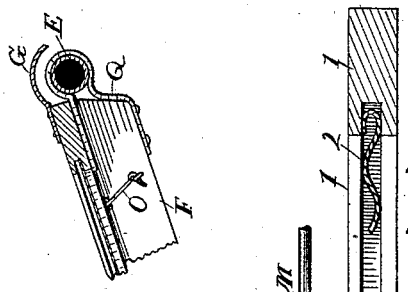

Fig. 4.

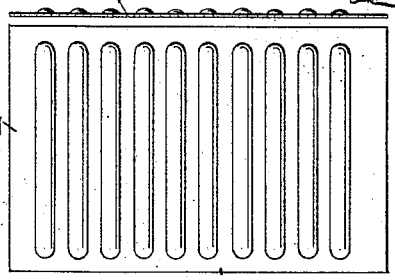

Fig. 5.

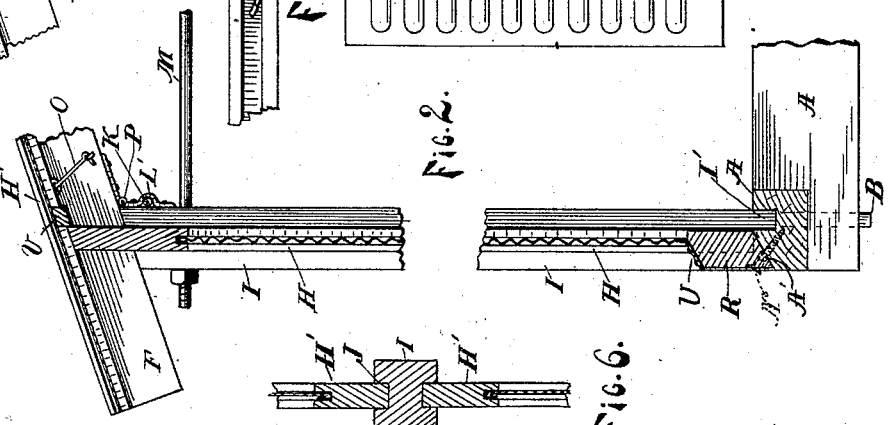

Fig. 2.

Fig. 6.

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Charles H. Leonard

By His Attorney

Edmund Jaggard

UNITED STATES PATENT OFFICE.

CHARLES H. LEONARD, OF GRAND RAPIDS, MICHIGAN.

PORTABLE HOUSE.

SPECIFICATION forming part of Letters Patent No. 419,859, dated January 21, 1890.

Application filed August 31, 1889. Serial No. 322,519. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. LEONARD, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Portable Houses, of which the following is a specification.

The nature of my invention relates to a portable house constructed of wood and metal, combined so as to form a cheap and substantial structure, which can be quickly and readily set up and quickly and readily taken down and packed in a small compass for shipment or storage, the object of my invention being to combine strength, durability, cheapness, and comfort. These objects I accomplish by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the frame-work of the portable house with one side removed for the purpose of showing the method of supporting the roof by means of posts or supporting-poles. Fig. 2 is a sectional view of one side of the house and a portion of the roof on line *x x* of Fig. 3. Fig. 3 is a side elevation of the house, showing a portion of the roof which projects over the side wall, also showing the side wall of the house. Fig. 4 is a section of the roof on line *z z* of Fig. 3, showing the grooved panel-frame and one method of preventing the water from the metallic roof-panel from penetrating the wooden panel-frame. Fig. 5 is a modified form of a corrugated panel. Fig. 6 is a sectional view of the side wall on line 8 8 of Fig. 3, showing the method of attaching the panels to the studding; and Fig. 7 is another form of connecting together the metallic panels which form the roofs.

Similar letters refer to similar parts throughout the several views.

In constructing my newly-invented house I use a frame-work of sills and a series of perpendicular studs grooved to receive the panel-frames which form the walls of the building, which panel-frame incloses or bears on its surface metallic panels, made, preferably, of corrugated iron. The studding rests in grooves in the sills and supports the rafters, which are attached directly to the top of the studding, thereby obviating the necessity of a plate. I also use two or more upright supporting-poles, which, preferably, are made of iron tubing, and which pass through the sills and rest upon stone foundations beneath, properly braced in order to give strength and stability to the structure when completed. I also use a series of rafters attached to a ridge-pole supported upon the upper ends of the supporting-poles, and upon the rafters I place corrugated metallic panels, so constructed and placed together as to prevent leakage, covering the whole at the ridge with a weather-strip, preferably made of iron, the whole structure being bound together by means of binding-rods, as more fully described hereinafter.

A A are sills, which are grooved to receive the lower ends of the studding. These sills are beveled, so as to form a water-shed, which bevel is shown by A′. The sills are attached together, preferably, by means of pins or bolts. (Shown in the drawings by B B.)

D D are supporting-poles, which extend from the ridge-pole through the sills and rest in a socket C′ upon a block, stone, or other suitable foundation. The stud Y passes into the supporting-post D immediately beneath the sill and forms a support therefor. The ridge-pole E is attached to the supports D D by studs or pins Y′. In order to steady the supporting-poles, I provide braces C C C, extending from the socket C′ to the sill, as shown in the drawings. Upon the upper ends of the supports D D is the ridge-pole E, securely attached to the poles in any suitable manner.

In the drawings I have shown a socket for the reception of the ridge-pole, which I prefer, inasmuch as it can be readily detached and attached. The studs are shown by I I, the lower ends of which studs rest within a groove within the sills and extend upward to the rafters, the side studding being attached to the rafters by means of a hinge. (Shown by P.)

The rafters F are provided with loops Q, so that they may be slipped upon the ridge-pole and held securely in place. The corrugated panels, which are substantially of the same construction as the panels for the walls, are

fitted into or onto the frames, which frames are shown by S S and which panels are shown by H. These panels are placed together so as to form joints which will turn the water and prevent leakage, the form of the joints being shown in Fig. 3 by T T. A curved connection gives a water-channel for the discharge of any water which might drop into the aperture formed by the junction of the panels. Instead of using the curved joint, as shown in Fig. 3, the two panels H and H may be made to entirely cover the supporting-frame, and the edge of one panel bent so as to overlap the other in the form shown in Fig. 7 by H″. It will be observed that in the form shown in Fig. 7 by H″ the supporting-frame is entirely covered by the metallic panels, thus presenting a continuous metal surface to the weather.

When the panels are placed in position upon the roof, a weather-strip G covers the ridge and prevents leakage. The sides are composed of corrugated panels (shown by H) and a panel-frame. (Shown by H′.) These panel-frames are fitted into grooves in the studs I I, which grooves are shown by J. The form of the panel and its connection to the studs are fully shown in Fig. 6. The metallic panel extends into grooves in the frame, and is turned so as to make a channel for any water which might be driven in between the panel and panel-frame.

The hinge P, which attaches the rafters to the top of the studs, is provided with a loop L′, and a rod K extends through these loops, as shown in Fig. 1, and binds the panels and studding together, thus making a solid and substantial structure of the side walls of the house. I provide on the studding at the ends or gable ends of the house a series of loops L L. Through these loops is passed the binding-rod M, which serves to bind together the end panels, forming a solid and substantial wall for the ends of the house. The studs at their lower ends are attached to the sills by means of screws N N, and the roof-panels are attached to the rafters by means of hooks O, as shown in Figs. 2 and 7.

The metallic loops in the ends of the rafters which engage with the ridge-pole are shown by Q.

R shows the base of the panel-frame, which is beveled so as to form a water-shed and so as to receive the lower end of the metallic panel upon its upper surface, and to fit closely the beveled upper surface of the sill from beneath. The lower support of the metallic panel is shown in Fig. 2 by U. This covers and protects the wooden sill and the strip R from exposure to the elements. I also provide a cleat which serves as a stop for the roof-frame, and which may serve to cover any aperture where the roof meets the rafters, which strip is shown in Fig. 2 by V.

The frame for the roof-panels is shown in Fig. 4 by 1, and that portion of the metallic panel which enters into the grooved panel-frame is shown by 2, the same being curved, so as to carry off the water and prevent leakage. Instead of constructing the metallic panel corrugated from side to side, in some cases I prefer to construct a metallic panel having its edges without corrugations, but with corrugations within the center of the panel, as shown by 2′ in Fig. 5. By this construction all the edges of the panel may be turned into substantially the form shown in Fig. 4, so as to form a water-tight joint; or the groove in the panel-frame may be so fine that the panel metal will completely fill it, and when painted the joint will be water-tight. The corrugations so stamped into the metal may be of any required shape or size.

The portable house constructed as described may be lined with felt, cloth, paper, or any suitable material when found necessary or desirable for keeping out the cold.

I do not herein claim the grooved roof-panel frame with the metallic roof-panel having its edges bent to form water-channels, as such is described and claimed in my application, Serial No. 322,520, filed of even date herewith.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In a portable house, the combination of a series of studs grooved to receive the panel-frames, a series of panel-frames containing or bearing corrugated or stamped metallic panels, and binding-rods, said studs resting upon suitable sills and said binding-rods clasping the studs to the panel-frames, substantially as and for the purpose described.

2. The combination of the sills adapted to support the studding, the studs forming the side supports of the house, and a series of rafters hinged to the upper ends of the studs, a ridge-pole having the rafters detachably attached thereto, supporting posts or poles detachably connected with the ridge-pole, and transverse binding-rods stretching from the eaves of the house on either side, all substantially as described.

3. In a portable house, the combination of a metallic corrugated panel, a panel-frame, and grooved studding and rafters adapted to receive and hold the panel-frame in position to form the walls and roof of the house, substantially as described.

4. In a portable house, the combination of a series of rafters containing loops adapted to receive the ridge-pole, a ridge-pole adapted to pass through such loops, supporting-poles detachably connected with said ridge-pole, and suitable means for securing said ridge-pole to the rafters, substantially as described.

5. In a portable house, the combination of supporting-poles, a ridge-pole at the upper ends thereof, sills through which the supporting-poles pass, and braces below the sills extending from the foot of the posts to the sills, and a pin for the purpose of holding the ridge-pole down, substantially as described.

6. In a portable house, the combination of

the sills having a bevel upon the upper sides, a panel-frame beveled to fit upon the beveled surface of the sills and having an upper beveled surface, and a metallic panel having its lower end bent to fit upon the beveled panel-frame, thereby forming a water-shed, substantially as described.

7. In a portable house, a roof composed of the combination of rafters having loops whereby they are attached to a ridge-pole, a series of corrugated metallic panels inclosed in or supported on suitable frames, and suitable means for attaching such frames to the rafters, substantially as described.

8. The combination of the sills, the studding, the panel-frames containing corrugated or stamped metallic panels, the rafters hinged to the top ends of the studding and provided with loops adapted to engage with the ridge-pole, the ridge-pole detachably attached to the supporting-poles, the supporting-poles adapted to support the roof, and binding-rods passing through suitable loops and adapted to bind the side and end walls of the house together and to clasp and support the panels in position, substantially as described.

9. In a portable house, the combination of the ridge-pole, the rafters detachably connected with the ridge-pole, panel-frames provided with corrugated or stamped metal panels with their upper ends in juxtaposition to the ridge-pole, and a weather-strip arched over the ridge-pole and extending beyond the upper edges of the panel-frames, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

CHARLES H. LEONARD. [L. S.]

Witnesses:

HUGH E. WILSON,

EDWARD TAGGART.