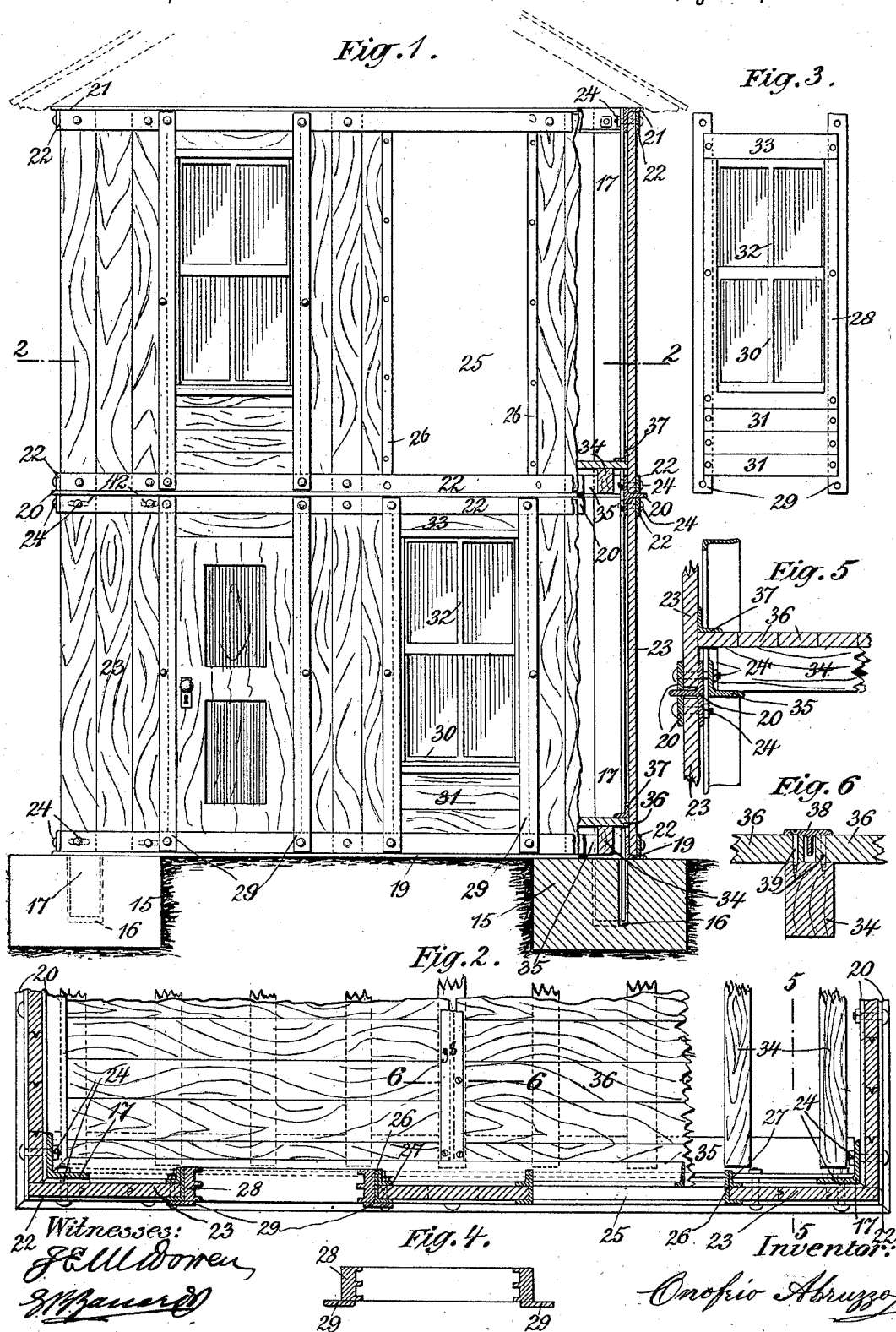


2 Sheets—Sheet 1.

No. 540,084.

Patented May 28, 1895.



(No Model.)

2 Sheets—Sheet 2.

O. ABRUZZO.  
CONSTRUCTION OF PORTABLE BUILDINGS.

No. 540,084.

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Fig. 7.

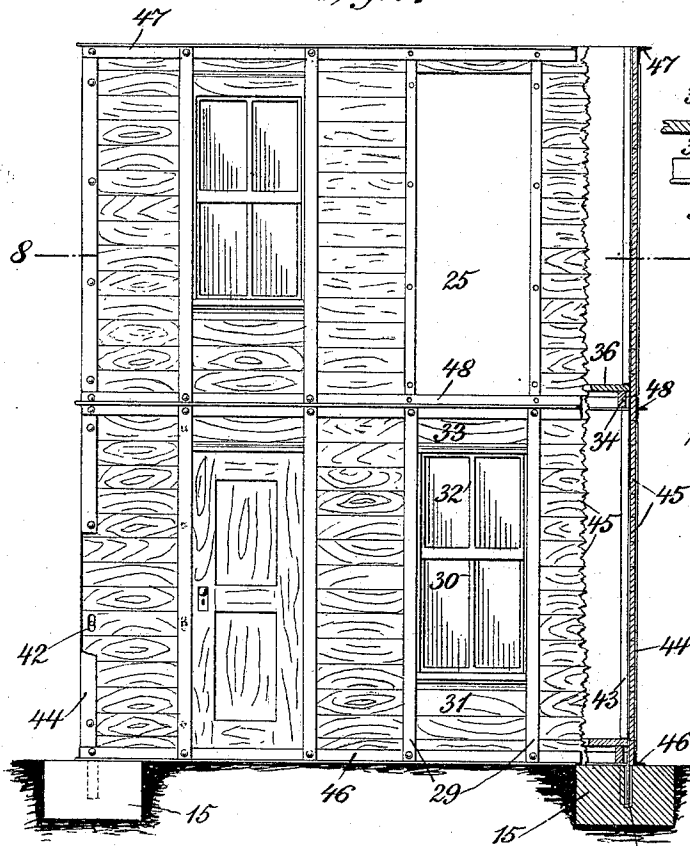


Fig. 9.

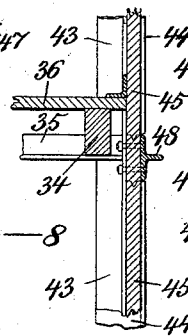


Fig. 10.

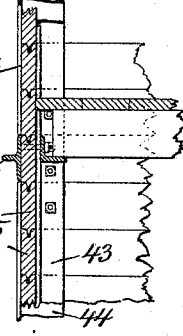


Fig. 12.

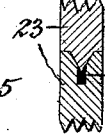


Fig. 11.

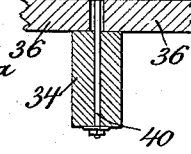


Fig. 13.

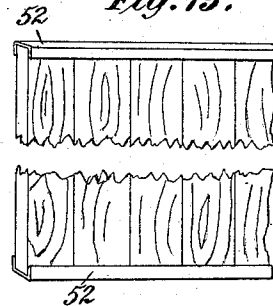
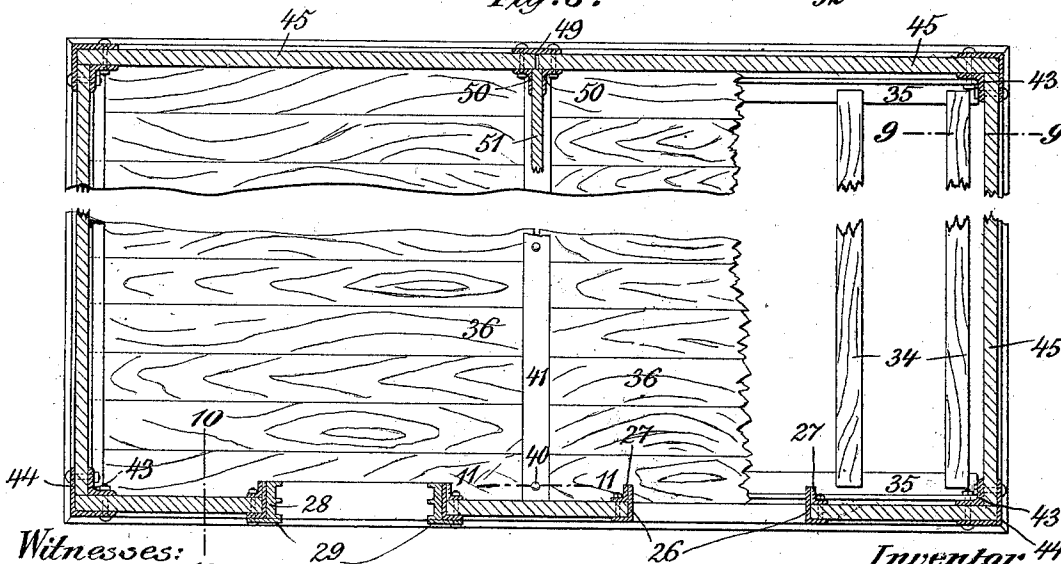


Fig. 8.



Witnesses:

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# UNITED STATES PATENT OFFICE.

ONOFRIO ABRUZZO, OF NEW YORK, N. Y.

## CONSTRUCTION OF PORTABLE BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 540,084, dated May 28, 1895.

Application filed September 14, 1894. Serial No. 522,971. (No model.)

*To all whom it may concern:*

Be it known that I, ONOFRIO ABRUZZO, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in the Construction of Portable Buildings, of which the following is a specification.

My invention relates to improvements in the construction of buildings suitable particularly to be used as dwellings, stables, storage sheds and, in general, for purposes which do not call for very heavy and massive structures.

The purposes of my invention are to so construct the various portions of such buildings which particularly constitute its walls and to so assemble and connect the same with each other, that thereby buildings may be produced which require very little time for their erection or for taking them apart which, while light in weight and comprising a small amount of building material shall possess great strength as well as elasticity, and shall be capable of being kept tight notwithstanding the shrinkage which may occur in the portions of the building constructed of wood. I accomplish these and other useful objects by the means hereinafter described and set forth more particularly in the claims.

In the accompanying drawings, wherein like figures of reference refer to corresponding parts, Figure 1 represents a front elevation, partly in section, of a two-story building constructed according to my invention, a panel normally forming part of the structure and comprising a window being omitted in the right-hand portion of this view. Fig. 2 is a horizontal section of the building along line 2 2 in Fig. 1. Fig. 3 is a rear view of the panel above referred to in condition to be inserted in its proper position as part of a building. Fig. 4 is a horizontal section of a window-frame with adjoining metallic rib-piece. Fig. 5 is a vertical section along line 5 5 in Fig. 2, and Fig. 6 a like section along line 6 6 in Fig. 2. Fig. 7 is a front view, partly in section, of another building embodying features covered by my invention. Fig. 8 is a horizontal section along line 8 8 in Fig. 7, and Figs. 9, 10, and 11 are vertical sections along lines 9 9, 10 10, and 11 11, respectively, in Fig. 8, while

Figs. 12 and 13 are detail views, the latter drawn in perspective, showing my preferred modes of joining together various portions employed in the construction of buildings erected in accordance with my invention. Figs. 1, 3, and 7 are drawn on a smaller scale than the remaining figures.

Referring now to Figs. 1 to 6 inclusive, 15, 15 are blocks made of masonry, concrete, cast iron or other material suitable for constructing therewith foundations for buildings, the said blocks to receive the upright angle irons. Said blocks are located underneath the corners of the building, so as to extend outward as well as inward. Near the central portions of such foundation blocks vertical channels 16 extending into but not through said blocks are provided, capable of receiving the lower ends of angle irons 17 which serve as the main vertical corner supports of the building.

19, 19 are horizontal angle irons resting upon foundation blocks 15 and being bolted to upright angle irons 17. 20, 20 are T-irons attached to said uprights so as to have their main ribs extend outward therefrom and 21, 21 angle irons secured to the upper ends of angle irons 17. Bars 19, 20 and 21 are all so fastened to the outer surfaces of corner posts 17 as to have one of their flanges extending in an outward direction.

22, 22 are horizontal flat metallic bars placed opposite to bars 19, 20 and 21, and at such distances therefrom as to permit the insertion between them of vertical planks or boards 23, preferably tongued and grooved, which are to form the main body of the outside walls of the building. These planks or boards extend between and abut closely against the horizontal flanges or ribs of bars 19, 20 and 21.

24, 24 are bolts which serve to hold the tie bars 22 to the corresponding metallic bars 19, 20 and 21 thus serving to confine boards 23 in their proper positions.

Where doors or windows are to be inserted in the outer walls I provide openings 25 therein extending vertically between successive tie bars 22. 26, 26 are vertical angle bars placed on both sides of such openings and having one flange extending along the outer surface of the nearest adjoining board 23, and 27, 27 are smaller angle bars having one flange extending along the inner surface of such a

board and having its other flange placed along and secured to the corresponding flange of an angle iron 26. By using these two sets of vertical angle irons as indicated, I obtain openings 25 in the walls of the building extending vertically between an upper and a lower lateral tie beam and having their sides smooth and in proper condition to receive the frame of a window, or of a door, as the case may be. 28 is such a frame provided on each side with two vertical inner grooves, one of them adapted to receive therein the lower window sash 30 and the other to receive the upper window sash 32. 31 and 33 are boards filling out the remaining spaces. The window casing and boards 31 and 33 are bolted to the flat metallic uprights 29 in such a manner that the latter will extend outward sufficiently so as to overlap the outer flanges of uprights 26 when put in their proper positions, bolts being used to connect these uprights with each other and to connect those forming parts of the panels with lateral tie pieces 22, and thus to secure the window panel in its desired position.

For the purpose of supporting the wooden floor beams 34, I run angle irons 35, 35 along two opposite sides of the building, so bolting said angle irons to corresponding angle irons 19 or T-beams 20 as to make one of their flanges form a shelf extending inward on which the ends of the wooden floor beams are made to rest.

36 are boards constituting the floors and 37 small angle irons placed on top of the same where they join outer boards 23 forming the walls of the building, thus providing tight joints between the same. These small angle irons extend between main uprights 17.

Where the ends of floor boards 36 come to rest on a floor beam the joints between them may be made tight, as illustrated particularly in Fig. 6, by so placing a T-iron 38 above these ends as to have its flanges rest thereon and have its main rib extend downward between said ends, bolts 39 being used to join it together with said boards and the floor beam underneath. For this mode of connecting the parts that illustrated in Fig. 11 may be substituted, wherein a single bolt 40 passing through a flat iron bar 41 and the floor beam underneath holds the parts in their proper relative position.

I make the outer walls tight by providing the boards forming the same with tongues and grooves, providing in such grooves however an additional recess filled with rubber or other suitable and preferably elastic packing 41<sup>a</sup> as shown in Fig. 12, whereby the joints will be kept tight notwithstanding a slight shrinkage of the boards. In case the shrinkage however should be considerable, I provide for readjusting the positions of the boards as illustrated on the left hand side of Figs. 1 and 7 by providing said boards with elongated holes 42 running at right angles to the lengths of the boards through which holes bolts are made to pass fastening the boards to beams

19 and 22, or to the uprights as the case may be. I am thus enabled to bring the boards close together notwithstanding great shrinkage and to put in a compensating board or strip to make up for such shrinkage. It will also be seen that under my construction the holes in the boards are not exposed to the weather but are fully concealed and protected by the adjoining metallic beams.

It will be seen that the construction above described offers a very simple form of a portable house, the parts of which may all be prepared in the factory and be fitted carefully to each other, prior to shipping and erecting the same.

In the building illustrated in Figs. 7, 8, 9, and 10 I employ corner supports consisting of vertical angle irons 43 of small cross-section properly anchored in foundation blocks 15 and outer angle irons 44 of larger cross section placed parallel therewith so as to receive between their flanges the horizontal boards 45 forming the walls of the buildings. 46 and 47 are horizontal angle irons, having one of their flanges bolted to corner supports 44 thus joining the latter together and having the other flange extend outward, and 48 is a T-iron fastened in a corresponding manner to said corner supports and having its main rib extending outward, thus forming a water table from which water may drop off without reaching the wood work underneath. The end of the horizontal rib of T-iron 20, Fig. 1, has a similar function.

Openings for panels comprising doors and windows are provided in the walls as heretofore described and the wooden floor beams and floors are also arranged and supported as specified above. Material shrinkage of the boards which latter are placed horizontally is also compensated for as described, this structure in general being designed according to the same general plan but lighter and cheaper. Where boards 45 meet in the outer walls I join the same together by outer flat metallic bars 49 and inner angle irons 50 bolted together as shown in Fig. 8, said angle irons also serving to receive between them if desired the ends of horizontal boards 51 which form a partition.

In Fig. 13 I show a form of partition comprising boards having their ends inserted between the flanges of two U-irons 52. Said partitions may be inserted in any desired position the boards being made to run in any direction that may appear most suitable. While I prefer to make the frame of iron or other metal, it may be made of hard wood or of any other suitable material.

In the construction of the walls, floors, &c., I may use wood, iron, (corrugated or not), stone slabs, terra cotta, marble, hard compressed paper or papier maché or any other known suitable material or composition.

I claim as new and desire to secure by Letters Patent—

1. In a building, the combination with a

supporting frame made of suitable material having lateral tie pieces connecting its vertical members, of panels and boards or slabs filling the spaces between the metallic members, the lateral tie pieces being provided with flanges extending outward beyond the panels underneath the same, substantially as set forth.

2. In a building, the combination with suitable foundations, of a metallic frame comprising flanged uprights and lateral tie pieces provided with flanges extending outward, boards forming the walls of the building, additional metallic horizontal beams attached to the uprights and having a flange extending inwardly, such horizontal beams extending along the walls of the building, and floor beams supported by such flanges, substantially as set forth.

3. In a building, the combination with a metallic skeleton comprising verticals located on both sides of the spaces occupied by the windows and having flanges extending parallel with the sides of the building, of detachable panels comprising upright metallic bars overlapping said flanges and a window

casing secured thereto, and means for securing such upright bars to aforesaid flanges, substantially as set forth.

4. In the construction of a floor, the combination with a wooden floor beam, of boards resting thereon, a metallic T-beam having its flanges resting on the ends of said boards and having its main rib extending into the space between the ends of said boards, and bolts joining together said flanges, boards and wooden floor beams, substantially as set forth.

5. In the construction of buildings, the combination with a board provided with a tongue, of a second board provided with a groove capable of receiving such tongue said groove being enlarged inwardly, and suitable packing material, as rubber, inserted in the enlargement of the groove, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 12th day of September, A. D. 1894.

ONOFRIO ABRUZZO.

Witnesses:

J. E. M. BOWEN,  
G. B. ZANARDO.