

E. TOTMAN.

CONSTRUCTION OF HOUSES.

No. 333,903.

Patented Jan. 5, 1886.

Fig. 2

Fig. 1

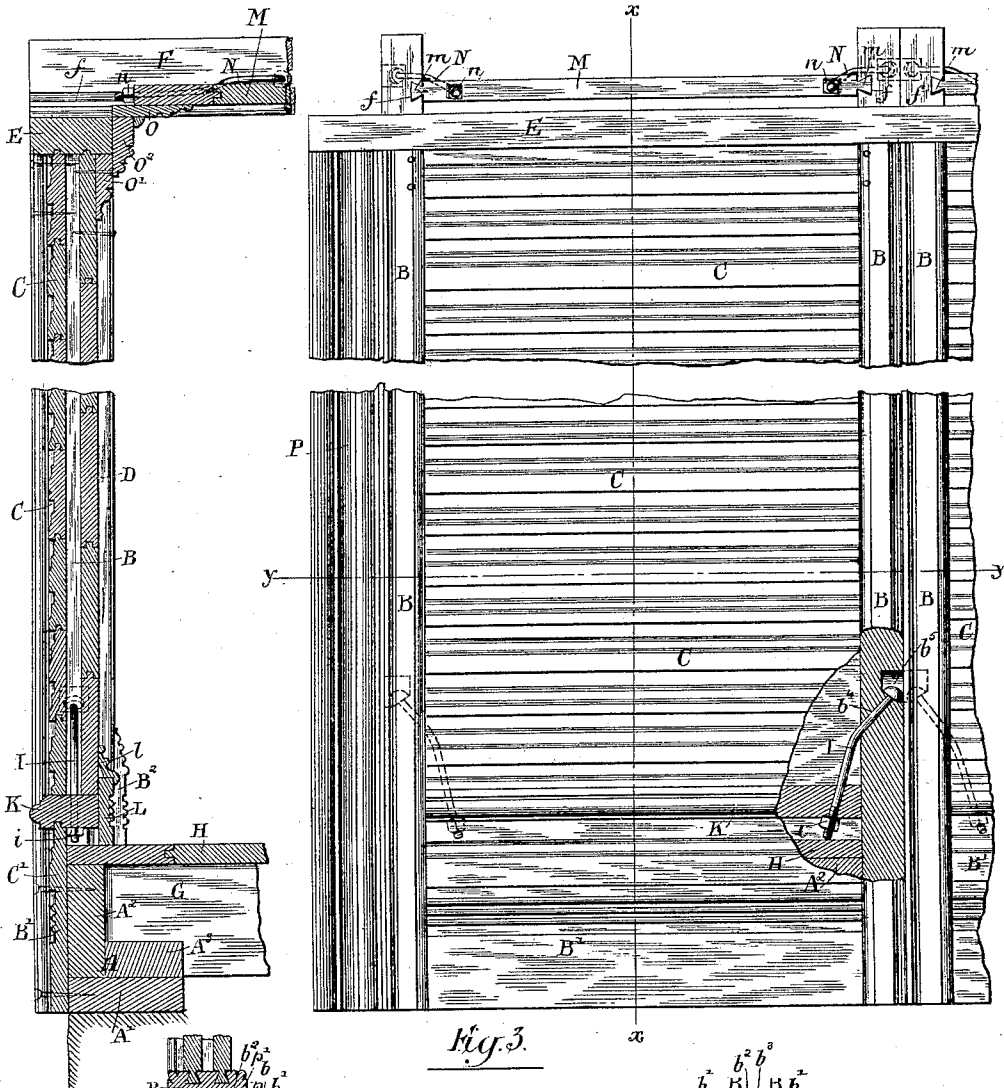


Fig. 3

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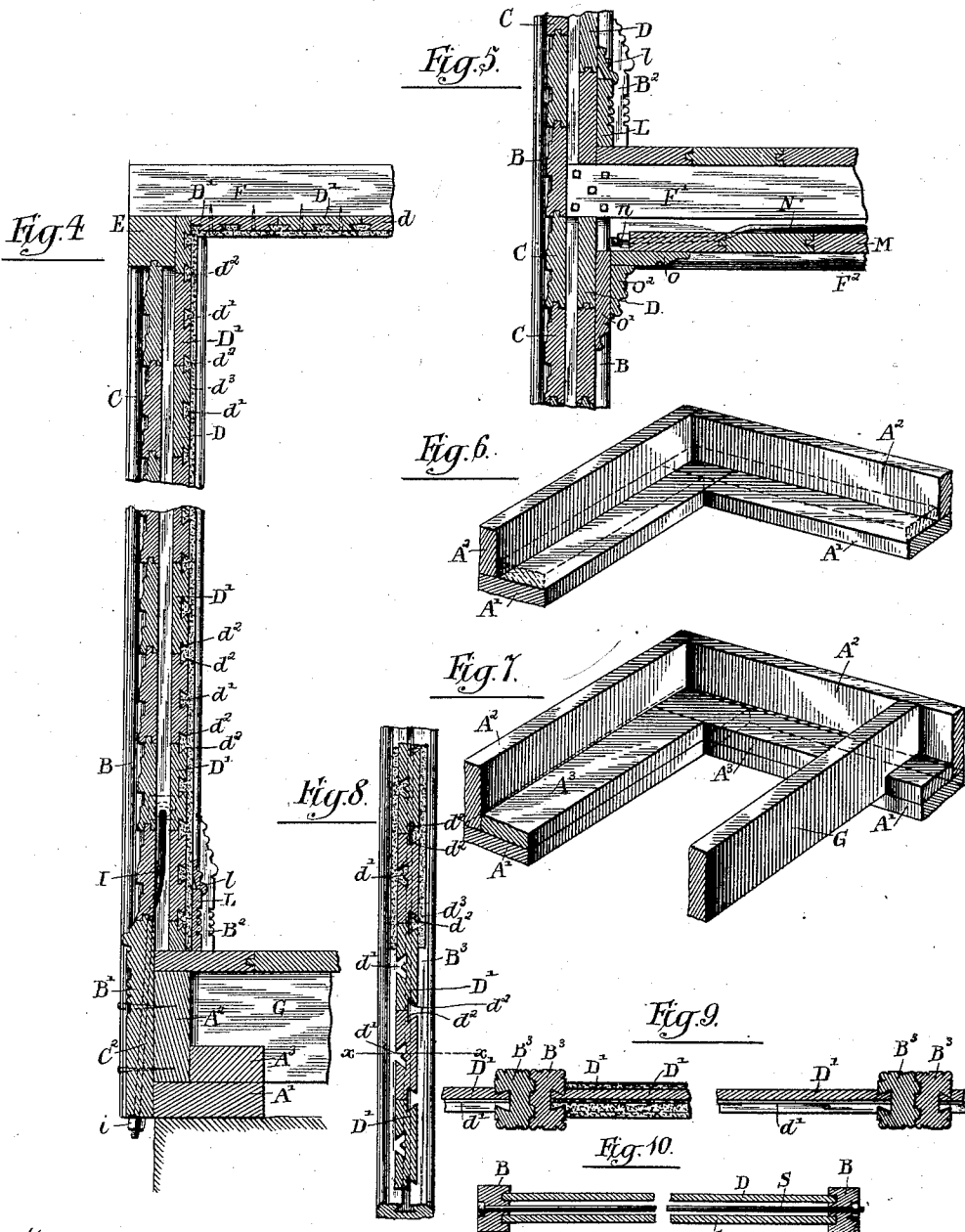
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UNITED STATES PATENT OFFICE.

EDSELL TOTMAN, OF HINSDALE, ILLINOIS.

CONSTRUCTION OF HOUSES.

SPECIFICATION forming part of Letters Patent No. 333,903, dated January 5, 1886.

Application filed April 8, 1885. Serial No. 161,524. (No model.)

To all whom it may concern:

Be it known that I, EDSELL TOTMAN, of Hinsdale, in the county of Du Page and State of Illinois, have invented certain new and useful
5 Improvements in the Construction of Houses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked
10 thereon, which form a part of this specification.

The object of this invention is to provide an improvement in the construction of frame houses; and it consists in the matters herein
15 after described, and pointed out in the claims.

The devices herein shown embody improvements in the construction of frame houses generally, and also in the devices shown in Letters Patent of the United States, No. 299,598,
20 granted to me June 3, 1884. Certain of the improvements herein described are more particularly applicable to buildings of that class known as "portable houses," or to those which
25 are made in parts adapted to be compactly transported to localities distant from the place of manufacture and then joined or set up. The side walls of the house shown in the said patent consist of parallel vertical posts, or
30 studding and siding between the posts, composed of relatively short horizontally-arranged planks joined at their ends to the posts by dovetailed tongues upon the plank fitted to
35 grooves in the said posts. In connection with the side walls constructed in this manner, vertical tightening-rods are shown in said patent extending through a stationary part of the
40 building-frame at their lower ends, and connected at their upper ends with the upper plank of the siding, or with a vertically-movable bar or follower located over the upper
45 plank, whereby the planks, after shrinking, may be drawn together and the cracks between them closed. One objection to this construction is that tightening-rods of length
50 equal to the height of the wall, either in a one-story or a two-story house, must be used. Another objection is that the tightening-nuts are not in position to be conveniently reached in all cases. To remedy the first objection, I
55 herein employ short bolts engaged at their headed ends with the vertical studs; and to remedy the second objection I locate the nuts

on the bolts at the bottom of the series of planks to be tightened, instead of at the top.

Another feature of improvement herein
55 shown is the use, in connection with vertical grooved studs, of horizontal planks provided with tongues upon their ends for engagement with the grooves of the studding, and having
60 longitudinal dovetailed grooves in their faces adapted to receive and hold plaster, so that the said plank may serve both as a sheathing and lathing. The grooved plank described
65 may be used for the inner sheathing in the case of double outside house-walls, in which case they may be grooved upon one side only, or they may be used for inside or partition
70 walls, in which case they are grooved upon both sides for the application of plaster.

In the patent above mentioned, also, the
70 vertical studs or posts are shown as provided with dovetailed grooves upon both sides, so that each stud directly receives the siding-planks at each side of it. In such construction
75 it is practicable to put together before shipment a panel comprising two adjacent studs and the intermediate siding; but it is
80 necessary in finally erecting the house to insert the planks of the panels upon either side of the one so formed. As an improvement on
85 this construction, whereby all the panels comprising the wall may be put together before shipment, I make the studding between panels double—that is to say, I construct the studs
90 thinner than formerly, and with dovetailed grooves upon one side only, into which siding-planks may be inserted to form panels of all
95 the materials which are to enter into the proposed walls. In setting up the building the panels thus completed are placed side by side, with the stud-pieces in contact with each
other, and the latter are then nailed or otherwise fastened together. Preferably the stud-pieces are provided with mutually-engaging
tongues and grooves upon their adjacent faces,
as shown, whereby tighter joints may be made and the panels may be brought more readily
and accurately to place.

The present invention embraces, also, improvements in the construction of house-sills,
100 in corner-pieces for portable houses, and other matters, as will hereinafter appear.

Referring to the accompanying drawings, Figure 1 is a side elevation of a part of a

house-wall constructed in accordance with my invention, said view showing a panel adjacent to the corner of the house and a corner-piece for uniting the panels at such corner. Fig. 2 is a vertical sectional view of the parts shown in Fig. 1, taken upon line $x x$ of said figure. Fig. 3 is a horizontal section taken upon line yy of Fig. 1. Fig. 4 is a vertical section similar to that shown in Fig. 2, illustrating another construction of parts embodying my invention. Fig. 5 is a detail sectional view illustrating a desirable construction of the parts at the junction between the floor-joists and the wall of a two-story building. Fig. 6 is a detail perspective view illustrating the way of constructing the corner of the house-sill. Fig. 7 is a similar view of the same when finished, preparatory to laying the floor thereon. Fig. 8 is a vertical sectional view of a plastered partition constructed with dovetailed lathing, as herein proposed. Fig. 9 is a horizontal section of the same, taken upon line $x x$ of Fig. 8. Fig. 10 is a detail view, hereinafter described.

In the said drawings, A indicates the sill; B, the vertical posts or studding; C, the outer plank or siding; D, the inner plank or sheathing; E, the wall-plate; F, the ceiling-joists; G, the floor-joists; and H the floor.

The side walls, constructed as herein shown, may be supported upon sills of any usual or desired construction; but, as herein illustrated, the sills A A are constructed in a novel manner, hereinafter described. Each post or stud B is provided upon one of its side faces with two dovetailed grooves, $b b'$, the outer grooves, b , being fitted to receive the dovetailed tongues c upon the planks composing the siding C, and the inner grooves, b' , being adapted to receive the tongues d upon the planks of the sheathing D. The studs B and intermediate planks are joined at the factory to form panels, usually, and preferably, about three feet wide, this being both a convenient size for handling and one suited to the requirements of building. In setting up the building the panels thus made will be united by placing the marginal stud pieces of the adjacent panels side by side and nailing or otherwise fastening them together. The studs B are preferably provided upon their outer faces, one with longitudinal tongues b^2 , and the other with corresponding grooves, b^3 , which by their engagement help to bring the parts to place and add to the strength of the structure. These tongues and grooves are placed near the inner and outer edges of the stud-pieces, as shown, so as to avoid the weakening of the stud by bringing the grooves b^3 opposite the dovetailed grooves b and b' . In this "sectional" construction of the house-walls, above set forth, I employ a corner piece or post, P, at each angle of the house, as shown in Figs. 1 and 3, said post P being provided on one of two converging sides with a tongue or tongues, p , and on the other with a groove or grooves, p' , adapted to engage with the corresponding

grooves or tongues of the adjacent stud-pieces B. Preferably the said corner stud-pieces B meet, as shown in Fig. 3, to present a proper appearance upon the inside, and the three joined parts are permanently secured by nails or screws let into the stud-pieces B through the corner post P.

I use bolts or rods intended to draw the wall-planks together after shrinking. As clearly shown in Figs. 1, 2, and 4, said bolts are inserted through oblique holes b^4 in the studs between the siding and studding, and are provided upon their upper ends with heads which rest in recesses b^5 in the studs. The holes b^4 , as shown in the said figures of the drawings, are located near the lower end of the studs, and are inclined downwardly and inwardly toward the middle and lower part of the panel. The said tightening-rods, in the construction shown in Figs. 1 and 2, are at their lower ends carried through a vertically-movable bar or follower, K, which is located between the studs B, with its upper surface resting against the lower edges of the lower planks, both of the siding C and sheathing D, said bolts being provided with screw-threaded nuts below the follower K, by turning which said follower and the planks above it may be forced upwardly toward the upper plank of each series, which is suitably held from vertical movement, and to thereby tighten all the joints between said planks.

As shown in Figs. 1 and 2, the planks composing the siding C and the sheathing D are provided with tongues and grooves at their meeting edges, so as to make water-tight joints, and the upper planks are held from movement by resting at their upper edges against the wall-plate E. Said upper planks may, however, be held in position independently of the plate by means of nails driven into the studs B and through the tongues upon the planks, as indicated in Fig. 1 and in dotted lines in Fig. 2.

The bar or follower K above described is preferably made to project slightly beyond or outside of the siding-planks C, so as to form what is known as a "water-table," and said water-table is placed slightly above the upper surface of the floor H, and at a sufficient distance therefrom to give room for the end of the bolt I and the nut i thereon. The spaces between the floor H and the follower and the outer faces of the floor and sill are preferably covered by means of a board, C', formed with dovetailed tongues at its ends, in the same manner as the plank composing the siding C, and inserted into the dovetailed grooves b at the lower ends of the studs, with its upper edge in contact with the said follower, said plank being held in place by screws or nails, so that it may be readily loosened and slipped downwardly or removed to permit access to the nut i when it is desired to tighten the siding. Said plank C', being also free to move vertically, may be lifted to meet the follower after the latter has been raised in tightening the siding.

It will be observed that, inasmuch as the said plank C' extends to a point level with or below the bottom of the sill, said plank may be raised considerably, with the effect only of disclosing a part of the sill and without leaving any part of the wall open to the admission of rain. In case, however, the lower edge of the said plank is carried to any considerable extent above the lower edge of the sill or the lower edge of the studs, a piece or strip of wood may be readily inserted below the said plank, so as to preserve a finished appearance in the lower part of the wall.

In order to enable the side-wall panels to be conveniently and readily set up, the flooring H is preferably first laid and extended to cover the sill A, and with its edges flush with the outer vertical face of said sill. Each stud B is fitted in place by cutting a right-angled gain in its lower end, so as to form a shoulder to rest upon the edge of the floor, and a downwardly-projecting part, B', Figs. 2 and 4, containing the siding-groove *b* and resting against the outer surface of the floor and sill. The stud so placed is readily secured by nails driven horizontally through the part B' into the sill, as indicated in dotted lines in Figs. 2 and 4. When the parts are constructed in this manner, the outer face of the sill and the edge of the floor are preferably brought into alignment with the inner face of the siding C, so that the plank C', when inserted in the dovetailed grooves at the lower ends of the studs, will come against the sill, and thereby make a tight joint between the parts.

In order to give a desired finish in the lower part of the wall upon the inside of the house and to cover the space between the floor and the follower K, when the latter is engaged with the sheathing, a base-board, L, is desirably provided and secured at its ends to the studding B, and preferably also to the floor, so as to remain stationary when the follower and sheathing are drawn upwardly, as before described. In the particular construction illustrated in the drawings a stationary molding, *l*, is placed above the base-board, and the double studding B is provided adjacent to the floor, with an ornamental block or plinth, B², in order to give a finish at this point.

In a house finished upon its inside without plastering overhead the ceiling is also preferably constructed of grooved horizontal beams or joists, and planks united at their ends with the joists by dovetailed tongues thereon, as before described, means being also provided for drawing up the planks composing the ceiling, in the same manner as before set forth in connection with the vertical walls of the house. A desirable construction for this purpose in the ceiling is illustrated in Figs. 1 and 2, in which the joists F are shown as resting at their ends upon the plate E, and as being provided with dovetailed grooves *f*, adapted to receive correspondingly-shaped tongues *m* upon the planking M forming the ceiling. In this case the end plank of the ceiling may be

secured from movement by nailing or otherwise fastening it, and inclined bolts N, held at their ends in the joists F, are inserted through the plank at the opposite end of the series from the plank which is so held from movement, and provided with a nut, *n*, by which the said plank may be drawn together laterally. In this case the bolt N will usually be bent or deflected vertically, as shown in Figs. 1 and 2, so as to permit its proper engagement with both the joist and end plank.

The form of the several parts shown in Fig. 1 being adapted for a portable house, the joists F and planks M are shown as constructed to form sections or panels, and said joists are arranged in pairs, in the same manner as before described in connection with the studs B of the side walls of the house.

It is obviously necessary, in the use of the means described for tightening the ceiling-planks, that the parts should be so constructed that access may be readily had to the tightening-nuts *n* upon the ends of the bolts N. For this purpose the outer edge of the end plank, M, of each panel is preferably located some distance inside of the inner surface of the side walls of the house, and the space thus left at the intersection of the ceiling and side wall of the room is covered by means of a board, O, secured at its ends, by nailing or otherwise, to the joists, said board being of sufficient width to always cover the space which may be occasioned by the movement of the end board in tightening the series. As shown in the drawings, Fig. 2, the said board O is shown molded or ornamented on its edge, and the inner edge of the plate E is covered, and the parts at the intersection of the wall and the ceiling made more ornamental in appearance by means of fillings-strips O', placed against the plate and the sheathing D, between the upper ends of the studs B, and a second strip or molding, O², placed against the board O and over the inner edge of the said plate E.

In Fig. 4 is shown another construction in a house-wall, in which the inner sheathing, D, of the double wall is covered with plaster, and tightening-bolts I are provided for drawing up the outer siding-planks, C, only, it being obviously unnecessary and impracticable to tighten up the inner sheathing when covered with plaster. In this case C² is a part corresponding with the follower K, and located at the bottom of the siding series, and preferably extending downwardly, so as to cover the sill A in the same manner as does the plank C', before described. The upper end of the bolt I is shown connected with the stud, and entering the space between the siding and the sheathing. In order to properly engage the plank C², said bolt is bent laterally outward, as shown, and inserted through an inclined passage in the said plank, with the nut *i* on its lower protruding end.

So far as the devices above described for drawing up or tightening the planks of both the ceiling and walls are concerned, it is ob-

viously immaterial as to whether the parts are constructed in sections or panels for use in a house adapted for transportation in parts or otherwise, it being only necessary for the operation of said tightening devices that the planks be capable of movement longitudinally of the frame-pieces by which they are supported. I desire, therefore, to claim, broadly, the novel features in said tightening devices, without limitation to the particular construction shown in the studs or planks, or means for uniting the latter.

In Fig. 4 the sheathing, as stated, is constructed to receive and hold a covering of plaster. For this purpose the sheathing is made in parts or boards D' , about four inches wide, each board having a central dovetailed groove, d' , and at each edge a half, d'' , of such groove, so that when the boards are put together in place a series of similar grooves are present, about two inches apart, to take the plaster coat d^3 and lock it in place. Each board D' of the sheathing, having but a single groove between its edges, may obviously shrink without cracking the plaster, because it will contract from its edges inwardly toward the central groove, by which it is fixed to the plaster. As shown in said Fig. 4, the ceiling is formed by plaster applied to sheathing-boards D' , similar to those above described, which are nailed to the ceiling-joists F .

In Figs. 8 and 9 the boards D' are shown as being held at their ends in dovetailed grooves in studs B^3 , and as having plastering applied to both sides, as in the case of a partition-wall. In this case each board D' is made about two inches wide, with dovetailed, rabbet, or half grooves d'' on one or both edges of one side or face, and with intermediate grooves, d' , on the other face. The boards will be held by the plaster which engages these intermediate grooves, and the movement of the boards, if any, from shrinkage, will be from the edges inwardly toward these intermediate grooves as fixed points, and therefore without cracking the plastering. The central groove being intermediate to the marginal grooves, also, the sheathing may obviously be made thinner than would be possible in case the grooves were opposite each other.

In Fig. 5 certain features of my invention are illustrated in connection with a two-story house. The studs B are continuous past the second floor, and the second-floor joists F' terminate inside the siding C , which latter may therefore, if desired, be also continuous from bottom to top of the house. The joists F' may be supported by resting on the sheathing D , or by being nailed to the side of a contiguous stud, or both. To the under faces of the joists F' may be fastened panels composed of two grooved side strips, F^2 , and intermediate tongued boards, M , already described, or the joists themselves may be grooved, as previously set forth.

In a two-story house the siding C may be vertically movable past the second floor for

tightening purposes, or the course opposite the second floor may be fixed and the upper and lower parts thereof tightened toward said fixed point or course by the devices already described.

Figs. 6 and 7 illustrate a novel construction of the sills of a house, having for its object to obtain the utmost strength obtainable from a given weight or quantity of material disposed to present desired surfaces, as shown. $A' A'$ in these figures are, say, six by two pieces placed flatwise on the foundation or supports for the building, and with the end of one abutting against the side of the other at the angle of the building. $A^2 A^2$ are pieces of the same dimensions set up edgewise on the pieces A' and abutting in the same way. $A^3 A^3$ are, say, two by four pieces placed flatwise on the pieces $A' A'$ and breaking joints with the latter, as shown. This construction gives a vertical depth of eight inches to the sill, and by nailing the parts together at their ends and elsewhere the utmost strength is obtained. The joists G rest upon the two by four pieces A^3 , and are gained, as shown in Fig. 7, to give a flush upper surface to receive the floor, as also seen in said Fig. 7 and in Figs. 2 and 4.

In the following claims for the section or panel as one of several similar elements in the construction of house-walls, I desire it to be understood that such panel or section is complete without the presence of tightening devices therein, since the latter are manifestly not concerned in the results of greater convenience, certainty, and expedition in handling and setting up which follow from the use of such sectional construction.

It will be understood, also, that in carrying out the broad features of my invention the transverse planks may be secured to the longitudinal marginal frame-pieces of the panels or sections otherwise than by the use of dovetailed joints between the parts. As, for instance, the construction illustrated in Fig. 10 may be used, in which the planks are fitted at their ends in rectangular grooves in the frame-pieces, and the latter are held in proper position relatively to the planks by means of tie-rods S .

The construction shown in Fig. 10 is obviously adapted for use in connection with the tightening devices above described and herein claimed, inasmuch as in such construction the planks are free to move longitudinally of the frame-pieces.

It will be further understood that movability on the part of the siding-planks in the grooves of the studs does not necessarily involve the presence of tightening devices as part of the structure, inasmuch as the planks may be forced together by external means, as a lever, or by driving.

I claim as my invention—

1. A house-wall composed of separately portable sections, each section consisting of two marginal frame-pieces united by transverse planks having their ends movably held

in longitudinal grooves of the frame-pieces, and the adjacent sections being joined to each other by placing and fastening together their marginal frame-pieces, which thus form double studding or frame-pieces of the building, substantially as described.

2. A section or panel for the construction of houses, comprising two studs or frame-pieces, and planks united with said frame-pieces by dovetailed joints, said frame-pieces being provided upon their outer faces with tongues and grooves, whereby tight joints may be formed between the contiguous sections or panels, substantially as described.

3. A section or panel for the construction of houses, comprising two longitudinal marginal frame-pieces having grooves therein, a series of transverse planks inserted at their ends in said grooves, means for holding the frame-pieces in proper relative position, and bolts for tightening the joints between the planks connected with the said frame-pieces and with the end plank of the series, said section or panel being adapted to be joined with other similar sections or panels to form a house-wall, substantially as described.

4. In combination with converging walls having marginal frame-pieces B, a corner-piece, P, occupying the angular space between the frame-pieces B, substantially as described.

5. In combination with the adjacent frame-pieces B at the wall-angle, the corner-post P, the adjacent faces of the frame-pieces and the corner post being provided with interfitting tongues and grooves, substantially as described.

6. The combination, with the parallel frame-pieces of a house and a series of transverse planks forming siding or ceiling, of means for tightening the joints between the planks, consisting of bolts connected at one of their ends with the said frame-pieces and at their opposite ends with a plank at one end of the series, substantially as and for the purpose set forth.

7. The combination, with the parallel frame-pieces of a house provided with dovetailed grooves, and a series of planks having upon their ends dovetailed tongues engaged with said grooves, of means for tightening the joints between said planks, consisting of bolts connected with the said frame-pieces and with the plank at one end of the series, substantially as set forth.

8. The combination, with the studding of a house and a double series of planks forming inner and outer walls, of means for holding the said planks from movement at one end of the studding, a movable bar or follower at the opposite end of the studding, located in contact with the end planks of both the inner and outer walls, and tightening-bolts secured in the said studding and engaged with the said follower, substantially as set forth.

9. The combination, with the upright frame-pieces or studding of a house and a double series of planks forming inner and outer walls, the upper planks of the series being held from upward movement, of a follower, K, forming a water-table resting against a lower plank of each series, bolts engaged with the studding and with the follower, and a removable plank, C', below the said follower, substantially as and for the purpose set forth.

10. The combination, with the sill and floor of a house, the vertical frame-pieces of studding, and a double series of planks forming inner and outer walls, of which the upper planks are held from upward movement, of a follower located above the floor, and below the lower planks of both series, bolts engaged with the studs and the follower, a removable plank, C', fitted against the sill beneath the follower, and a stationary base-board covering said follower, substantially as and for the purpose set forth.

11. The combination, with studs or frame-pieces having longitudinal grooves therein, of transverse plank, sheathing or lath held at its ends in said grooves, said plank, sheathing, or lath having means to receive and hold plastering, substantially as described.

12. The combination, with the studs or frame-pieces of a house having longitudinal grooves therein, of transverse lath, plank, or sheathing held at its ends in the said grooves and provided in one or both faces with dovetailed grooves affording a hold for plaster, substantially as described.

13. A combined sheathing and lath for buildings, consisting of laths or planks, each provided with a dovetailed groove in the middle of one of its faces and a half-groove upon its opposite face at each of its edges, substantially as and for the purpose set forth.

14. The improved construction in house-sills, consisting of the flat bottom pieces, A', pieces A² set on edge thereon, and the pieces A³ laid on the bottom pieces, and all arranged to break joints, and secured together, substantially as and for the purpose set forth.

15. The combination, with the house-sills, consisting of three planks, A', A², and A³, secured together, as described, of floor-joists G, gained to fit over the piece A³ and to come flush with the top of the piece A², substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

EDSELL TOTMAN.

Witnesses:

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OLIVER E. PAGIN.