No. 781,658. PATENTED FEB. 7, 1905.

J. H. KASSENS.

FRAME STRUCTURE.

APPLICATION FILED FEB. 18, 1904.

3 SHEETS—SHEET 1.

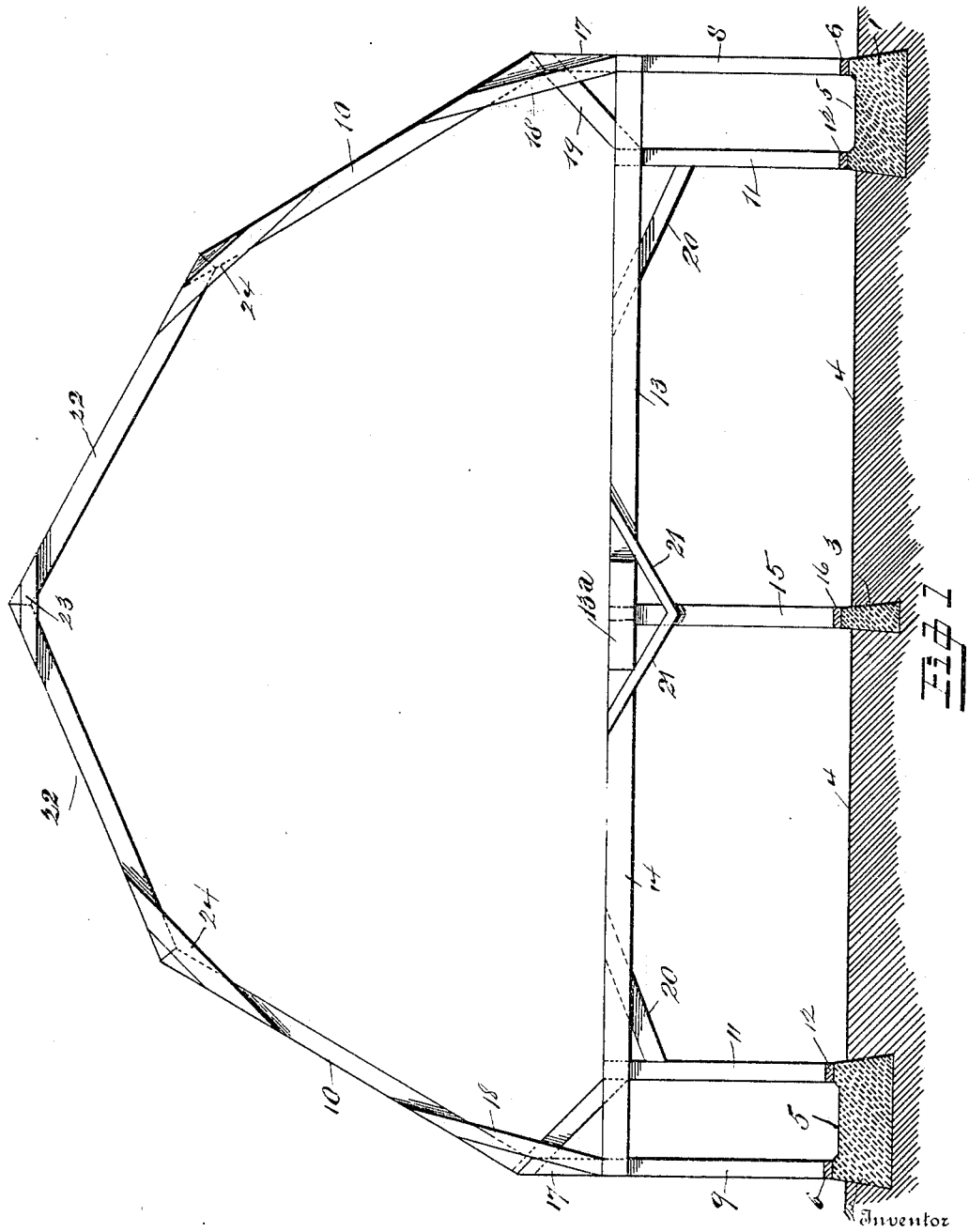



Fig. 1.

Witnesses

Wm. O. Mock

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Attorney

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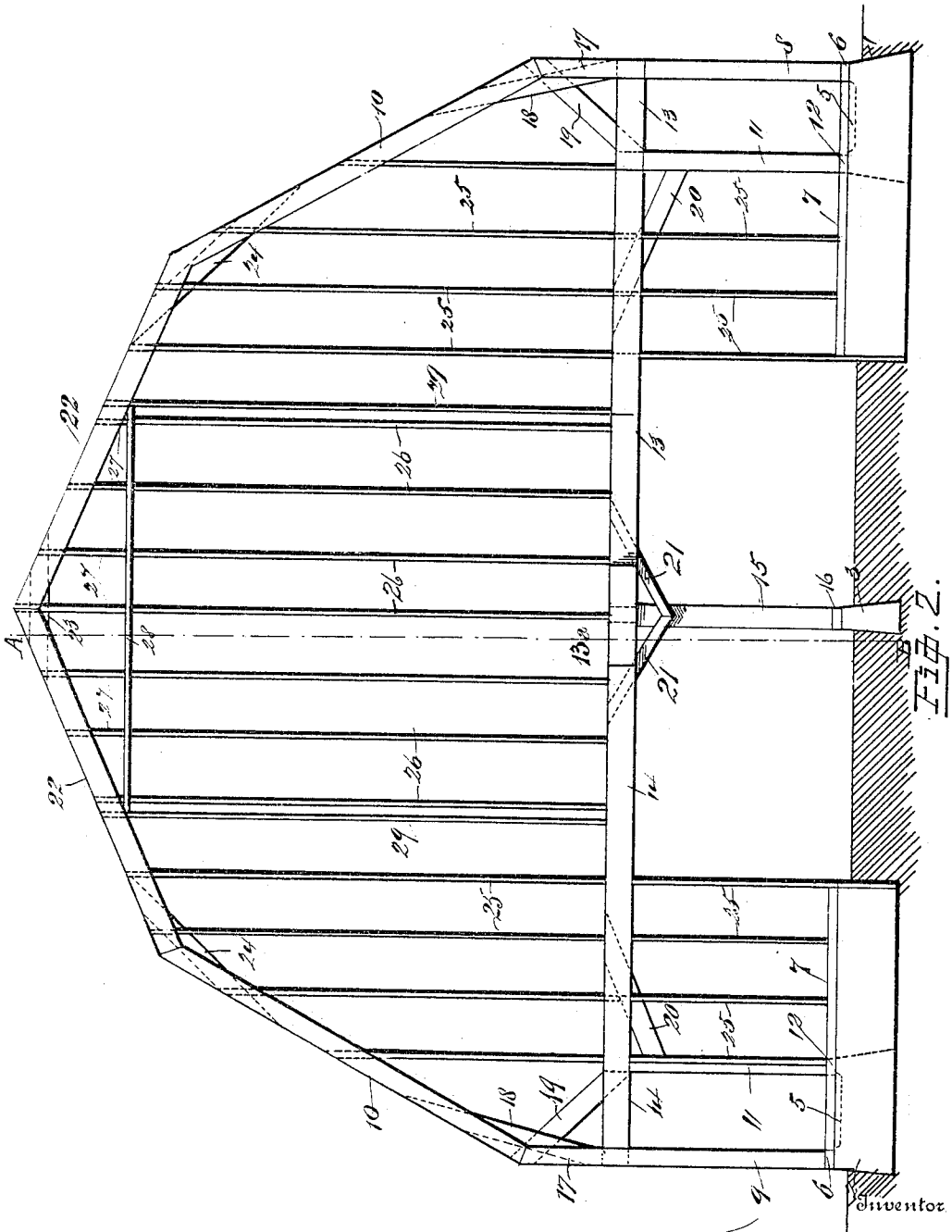


Fig. 2.

Witnesses

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3 SHEETS—SHEET 3.

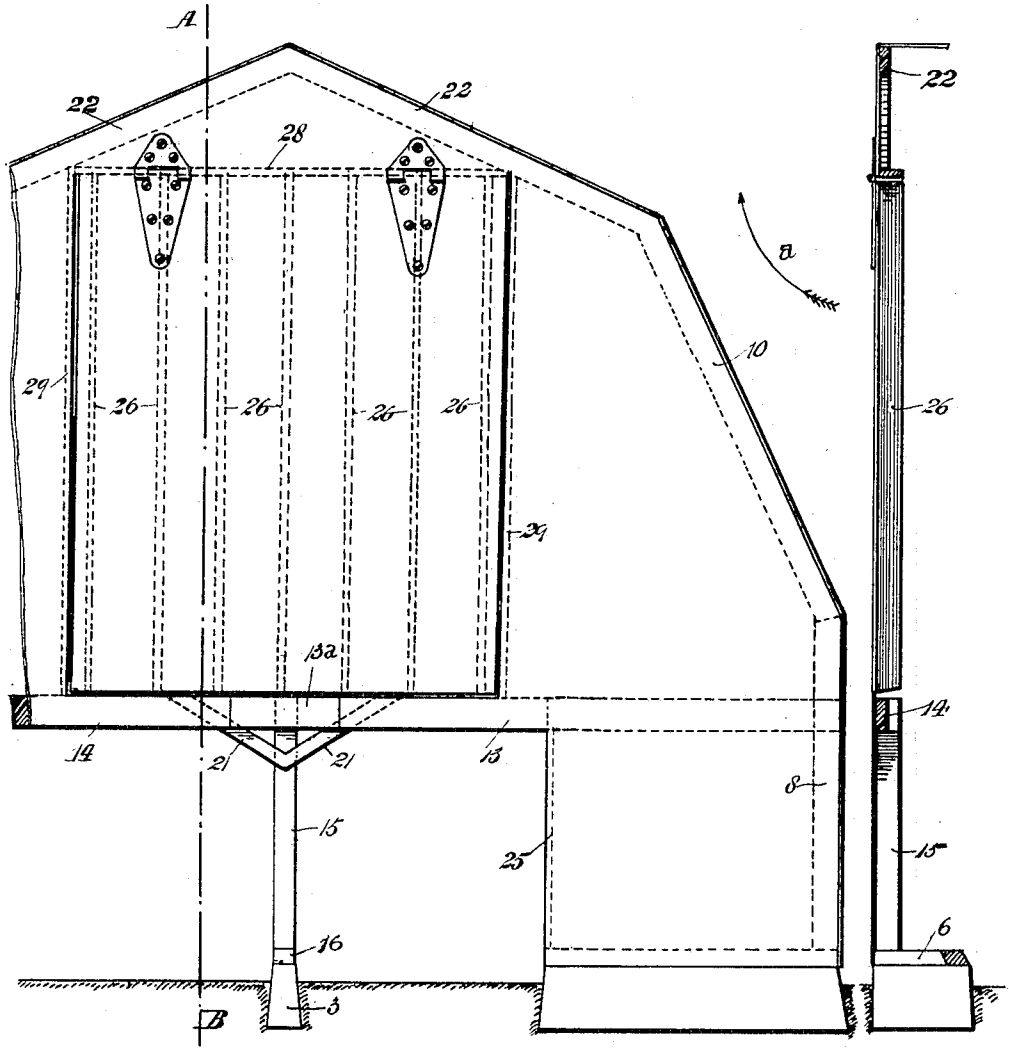



Fig 3

Fig 4

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Witnesses T. T. Ayers.

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By Thompson & Peel

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No. 781,658. Patented February 7, 1905.

# UNITED STATES PATENT OFFICE.

JOHN H. KASSENS, OF GREENSBURG, INDIANA.

## FRAME STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 781,658, dated February 7, 1905.

Application filed February 18, 1904. Serial No. 194,214.

*To all whom it may concern:*

Be it known that I, JOHN H. KASSENS, a citizen of the United States, residing at Greensburg, in the county of Decatur and State of Indiana, have invented certain new and useful Improvements in Frame Structures, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in the construction of barns or similar buildings designed to contain fodder, hay, and other feed material and for a sheltering and feeding place for stock.

The objects of this invention are to construct a cheap, light, strong, and stable framework for barns or similar structures, to construct a self-supporting roof-frame that will provide a clear and unobstructed storage-space between the roof-rafters and the floor of the loft, and to provide a cement or similar foundation or support for the said frame structure whereby the said frame structure is supported above the ground and from the moisture thereof, and to make a convenient and comfortable feeding arrangement for stock. I attain these objects by means of the arrangement of frame and roof structure illustrated in the accompanying drawings, in which similar numerals of reference designate like parts throughout the several views.

Figure 1 is a transverse sectional elevational view of my invention of a frame and roof structure. Fig. 2 is an end elevational view of the same. Fig. 3 is an end broken view of the structure, showing the end door thereof; and Fig. 4 is a sectional elevational view of the same, taken through the line A B. (See Figs. 2 and 4.)

The outer foundations 1 and 2 and the intermediate foundation 3 are preferably formed of cement properly embedded in the ground and arranged to project above the surface or grade-line 4 thereof a convenient distance therefrom. The side foundations 1 and 2 are guttered or channeled longitudinally on their top surfaces to form troughs 5 or receptacles for receiving feed for the stock housed in the barn. Side and end sills 6 and 7 rest on the top outer edges of the foundations 1 and 2 and to which the studs 8 and 9 are secured at their bottom ends and spaced at suitable intervals apart corresponding with the spacing of the roof-rafters, said studs extending vertically and upwardly from said sills to be connected to the lower abutting ends of the lower roof-rafters 10. The intermediate studs or posts 11 are secured at their bottom ends to the intermediate sills 12 and extend vertically therefrom to the floor-joists 13 and 14, to which they are spiked. The center posts 15 rest on the center longitudinally-extending sill 16 and the intermediate foundation 3, to which sill said posts are spiked at their bottom ends, and said posts extend vertically to the joists 13 and 14 to support them at their center portions, and said posts and joists are bound together by the tie-plates $13^a$.

The outer vertically-extending studs 8 and 9 extend above the floor-joists 13 and 14, and said extended top portions 17 of the studs are sawed at their ends to an angle corresponding to the angle at the ends of the lower roof-rafters 10, which latter have their said angled ends fitted against and resting upon the top angled ends of the top extended portions 17 of the said studs 8 and 9, and said ends are securely bound together by the joint tie-plates 18, which latter have their bottom ends fitted to and resting upon the top end edges of the joists 13 and 14. The top jointed or angled ended projecting portions 17 of the studs 8 and 9 are reinforced and rigidly held by the diagonally-extending braces or ties 19, which latter at their top ends lap over the abutting lower ends of the lower rafters 10 and have their bottom ends angled to fit against and abut the side of the top portion of the intermediate studs 11 and are spiked against the sides of the joists 13 and 14 to rigidly connect said diagonally-extending braces 19. The tie-plates 18 have their bottom ends jointed or fitted to the top edges of the joists 13 and 14 and extend upwardly to lap over the sides of the top portions 17 of the studs 8 and 9 and the bottom portions of the rafters 10, to which said ties are spiked to firmly unite and retain said portions in close contact and reinforce them at their connecting joints. Reinforcing-trusses 20 have their lower ends abutting the intermediate studs 11 at the sides thereof op-

posite to the sides against which the lower ends of the diagonally-extending ties 19 abut. Intermediate diagonally-extending struts 21 extend from the joists 13 and 14 at their central end portions to the top portions of the posts 15 to stiffen said floor-joists and materially add to the stability of the structure.

The upper roof-rafters 22 have their top ends cut to the required angle of the top portion or section of the roof and are fitted together or abut and tied together by a joist-plate 23, to which said rafters are securely spiked. The lower ends of the rafters are cut to the required angle to fit and abut the top joint ends of the lower rafters 10, and the same are firmly secured and bound together by the joist tie-plates 24.

The sheathing or clapboarding is applied to the sides in the usual manner, and the ends of the frame structure are provided with studding 25, 26, and 27, against which the usual weather or clap boarding is spiked.

A lintel 28 extends horizontally between the top ends of the studs 29, to which latter it is securely spiked, and studs 26 are cut to a length to loosely fit and to extend vertically between said lintels 28 and the line of the top edge of the joists 13 and 14, and to the outer sides of said studs 26 boards of any suitable kind are nailed to form a door. The door thus formed is hinged at its top end to the lintel 28 to swing vertically and outwardly, and thus while supplies are being removed from the wagon or other vehicle into the barn said door when opened will form a roof to cover said vehicle and protect the laborer from the weather.

It will be observed that the manner of constructing the roof of this frame structure enables me to provide a very great storage capacity in proportion to the weight and quantity of material used, and in proportion to the capacity of the structure a minimum quantity of material is employed, thereby materially reducing the cost of the structure. It will also be observed that the lower roof-rafters being thoroughly and rigidly braced and reinforced at their lower ends, or the ends of greatest stress, are effectually prevented from spreading outwardly and the roof-framing as an entire structure is rendered self-sustaining and the use of all intermediate roof-bracing purlins, &c., is avoided.

Having thus fully described this my invention, what I claim as new and useful, and desire to cover by Letters Patent of the United States therefor, is—

1. In a frame building, the combination with the outer vertically-extending side studs thereof, transverse horizontally-extending floor-joists connected at their ends to said side studs below the top projecting ends of the latter, of inwardly diagonally extending ties connecting the top ends of said studs and said floor-joists, roof-rafters butted against the top ends of said studs, and tie-plates lapping over the butt-joints of said rafters and studs.

2. In a frame building, the combination with the outer vertically-extending side studs thereof, intermediate vertically-extending studs situated adjacent said outer side studs, horizontally-extending floor-joists connected at their ends to said side studs below the projecting ends of the latter, and connected intermediate their ends to the top ends of said intermediate studs, and inwardly diagonally extending ties connecting the top ends of said studs and said floor-joists and having their lower ends abutting the top sides of said intermediate studs, of roof-rafters comprising upper and lower abutting sections, said lower sections abutting, at their lower ends, the top angled ends of said studs and joist tie-plates lapping the joints of said rafters and side studs.

3. In a frame building, the combination with the outer vertically-extending side studs thereof, intermediate vertically-extending studs situated adjacent said outer side studs, horizontally-extending floor-joists connected at their ends to said side studs below the projecting ends of the latter and intermediate their ends to the top ends of said intermediate studs, inwardly diagonally extending ties connecting the top ends of said side studs and said floor-joists and having their lower ends abutting the top sides of said intermediate studs and counter diagonally-extending struts having their lower ends abutting said intermediate studs at a point below the top ends thereof, said struts having their upper ends connected to said floor-joists, of a roof comprising upper and lower abutting sections, said lower sections abutting at their lower ends, the top angled ends of said side studs and joist tie-plates lapping over the joints of said rafters and side studs.

4. In a frame building, the combination with the outer longitudinally-extending parallel supporting-foundations having longitudinally-extending channels, and parallel sills extending along the two top edges of said foundations, outer side vertically-extending studs secured at their bottom ends to said outer sills, intermediate vertically-extending studs secured at the bottom ends of said intermediate sills, horizontally-extending floor-joists connected at their ends to said side studs below the projecting ends of the latter and intermediate their ends to the top ends of said intermediate studs, inwardly diagonally extending ties connecting the top ends of said side studs and said floor-joists and having their lower ends abutting the top sides of said intermediate studs and counter diagonally-extending struts having their lower ends abutting said intermediate studs at a point below the top ends thereof, said struts having their upper ends connected to said floor-joists, of a roof comprising upper and lower abutting sections,

said lower sections abutting at their lower ends, the top angled ends of said side studs and joist tie-plates lapping the joints of said rafters and side studs.

5. In a frame building, the combination with the outer longitudinally-extending parallel supporting-foundations having longitudinally-extending channels, and parallel sill-bearing strips formed on and extending along the two top edges of said foundations, outer and intermediate sills resting on said bearing-strips, outer side vertically-extending studs secured at their bottom ends to said outer sills, intermediate vertically-extending studs secured at the bottom ends of said intermediate sills, horizontally-extending floor-joists connected at their ends to said side studs below the projecting ends of the latter and intermediate their ends to the top ends of said intermediate studs, inwardly diagonally extending ties connecting the top ends of said side studs and said floor-joists and having their lower ends abutting the top sides of said intermediate studs and counter diagonally-extending struts having their lower ends abutting said intermediate studs at a point below the top ends thereof, said struts having their upper ends connected to said floor-joists, of a roof comprising upper and lower abutting sections, said lower sections abutting at their lower ends, the top angled ends of said side studs and joist tie-plates lapping the joints of said rafters and side studs.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. KASSENS.

Witnesses:
HENRY D. KASSENS,
SUE LAMBERT.