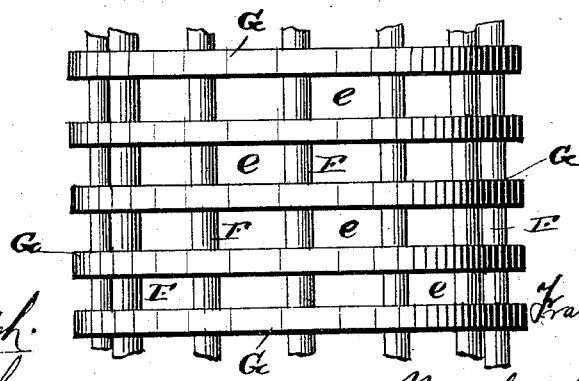
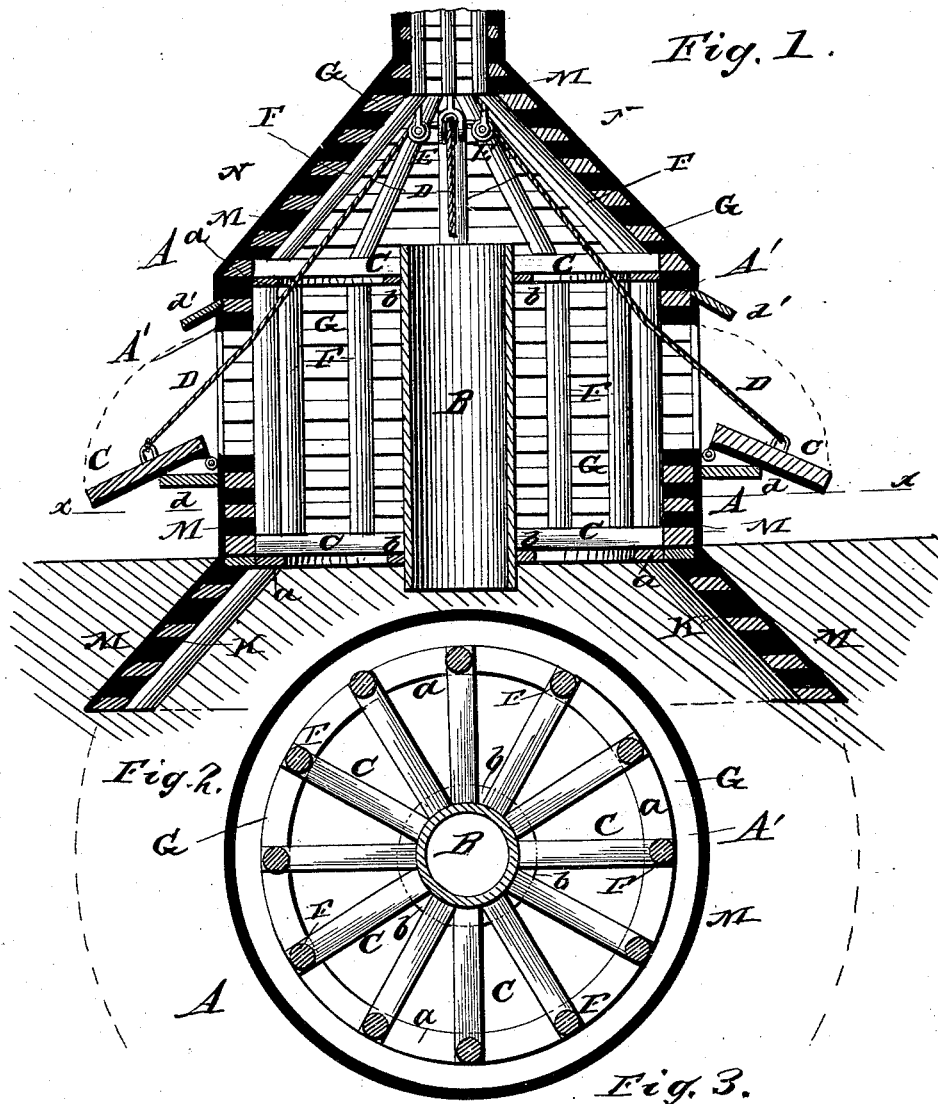


(No Model.)

F. K. ALEXANDER.
TORNADO PROOF BUILDING.

No. 302,463.

Patented July 22, 1884.



WITNESSES
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UNITED STATES PATENT OFFICE.

FRANCES K. ALEXANDER, OF STERLING, ILLINOIS.

TORNADO-PROOF BUILDING.

SPECIFICATION forming part of Letters Patent No. 302,463, dated July 22, 1884.

Application filed November 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANCES K. ALEXANDER, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Tornado-Proof Buildings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention has reference to the construction of tornado-proof buildings, and pertains to rendering such buildings intrinsically strong, insulating the same, provisions for instantly closing the same, rendering the roof integral therewith, and extending the same into the earth. The building may be constructed of a small size to be conveniently located, and to be used as a resort in cases of severe storms or tornadoes; or its general features may be adopted in permanent residences in those districts subject to devastating electrical storms and tornadoes.

In the drawings, Figure 1 is a vertical section of the complete structure embodying my invention. Fig. 2 is a horizontal cross-section of such a structure on the line *xx* of Fig. 1. Fig. 3 is a detached view of the exterior of the building before the glass or melted-sand coating is placed thereon.

A is the entire building, which is made octagonal or other shape presenting no right angles.

B is a frame rising vertically in the center of the building A, and around the frame B, at suitable elevations, are rigidly fastened the interior ledges, *b b*, to receive the joists *c*, which support the floor and ceiling.

Around the interior of the walls A' of the building are rigidly affixed the ledges *a a*, to receive the outer ends of the joists *c*.

C C are window-shutters hinged at their lower extremity, and resting, when open, upon the exterior ledges, *d*. A slight projection, *d'*, protrudes over each window to prevent the ingress of rain. A cord, D, passes from each window to the center of the ceiling, and there passes over pulleys E, and, after passing over

such pulleys, is plaited and brought down within convenient reach, so that one downward pull on such rope will instantly close all of the shutters C. The walls of the house are constructed of vertical posts F and cross-strips G, the latter having intervals *e* between them to receive the clinches of the outer coating. The walls A' have the flare K at their lower end around their entire exterior. The lower edge of the building is placed from three to four feet below the surface of the ground, and, after a coating of glass or melted sand, M, is poured over the exterior, the earth is firmly packed around the outside of the building to the normal level of the ground, the coating referred to protecting the building from moisture and consequent rotting. The roof N is of conical shape, and is constructed of rafters radiating like the joists *c* from the frame B, and suitably fastened to the tops of the posts F. The outer edge of the roof N does not project beyond the sides of the building. The rafters are decked and coated like the sides of the building, and the roof N is thus rendered integral with the remainder of the building. In a house of this kind used as a permanent residence the center frame, B, may be made of sufficient size to be used for butteries, closets, entry to cellar, &c.

H is a ventilator or chimney.

The advantages of this construction are, first, by reason of the interior being braced in every direction from a common center there is very little likelihood of the sides being forced in; second, by the construction shown of the window-shutters and the arrangement of the cord D all external apertures can be instantly closed; third, the exterior coating of glass or melted sand not only permits the partial sinking of the house below the surface of the ground without breaking its continuity, but as in the most terrific storms or tornadoes electricity is a prominent factor, such exterior coating, being a non-conductor in the highest degree, protects the building from electrical actions.

By constructing the roof with no projection beyond the sides of the building and coating the same with the building, no opportunity is given for the wind to raise the roof, and the latter is exteriorly integral with the sides of the building.

The flaring bottom of the building, projected under ground, makes it possible to give the building any degree of stability desired.

What I claim for my invention, and wish to secure by Letters Patent of the United States, is—

1. The building A, provided with the external flare, K, and having its exterior covered with glass or melted sand, substantially as shown, and for the purpose described.

2. In combination with the building A, provided with the external flare, K, shutters C, cords D, and pulleys E, substantially as shown, and for the purpose named.

3. The frame B, provided with the ledge b, the walls A', provided with the ledge a, and the joists c, in combination, substantially as shown, and for the purpose specified.

4. The walls A', provided with the outward flare, K, frame B, and joists c, in combination, substantially as shown, and for the purpose described.

5. The roof N, in combination with the walls A', provided with the outward flare, K, such roof and walls being incased together in a coating of glass, M, so as to be integral with each other, substantially as shown, and for the purpose shown.

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

FRANCES K. ALEXANDER.

Witnesses:

WALTER N. HASKELL,
J. D. STONE.