

(No Model.)

3 Sheets—Sheet 1.

J. G. C. DÖCKER.
PORTABLE STRUCTURE.

No. 308,833.

Patented Dec. 2, 1884.

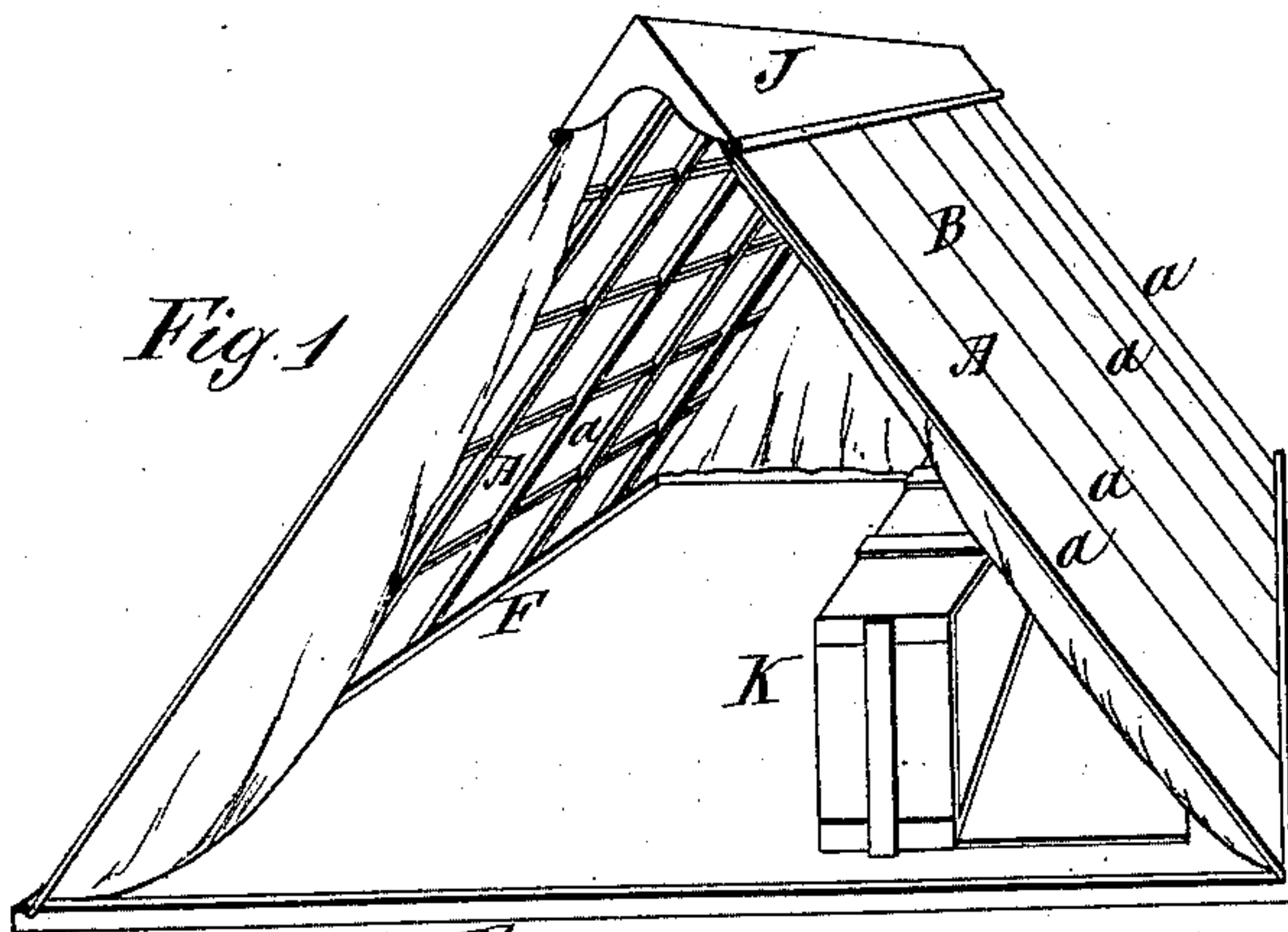


Fig. 1

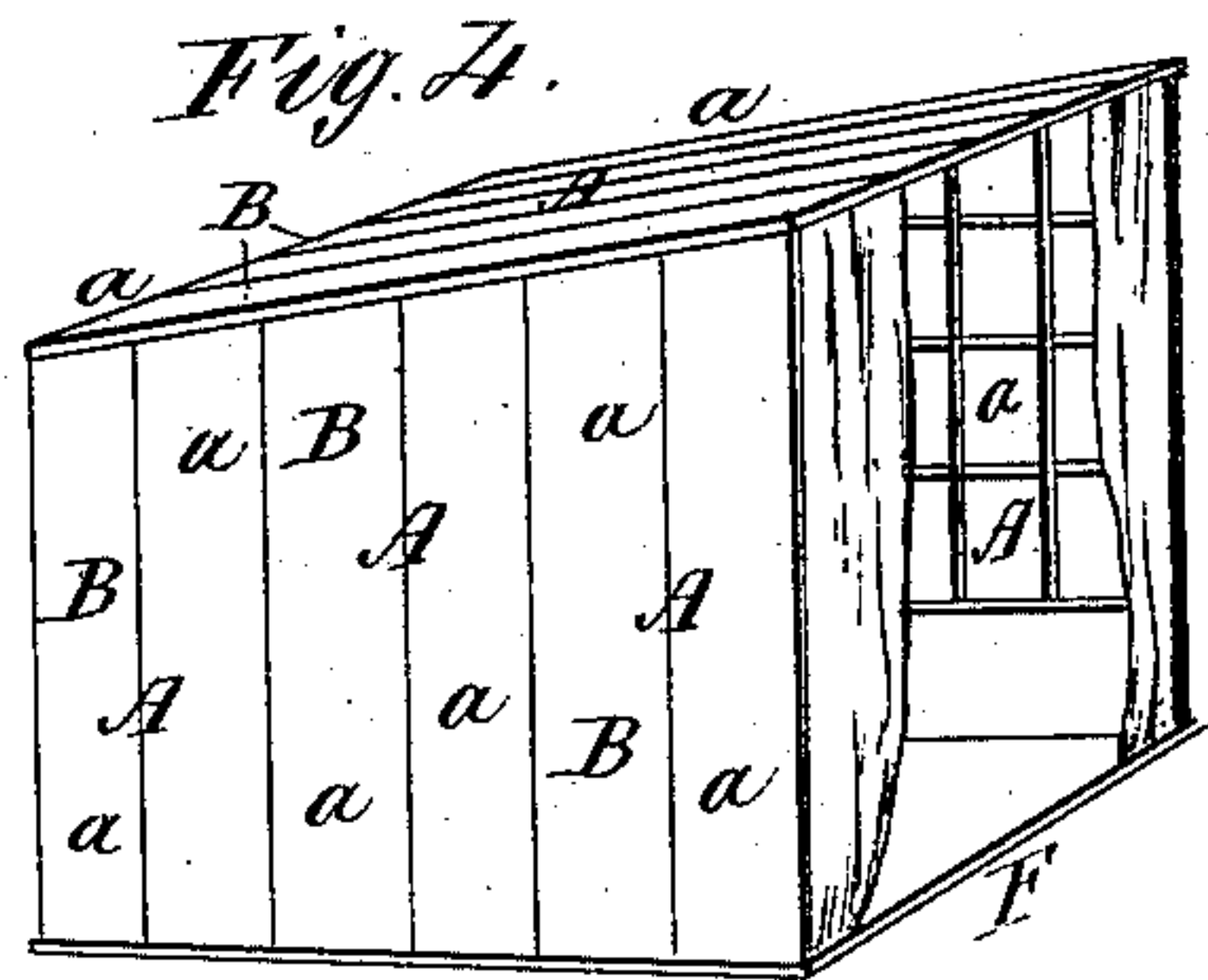


Fig. 4.

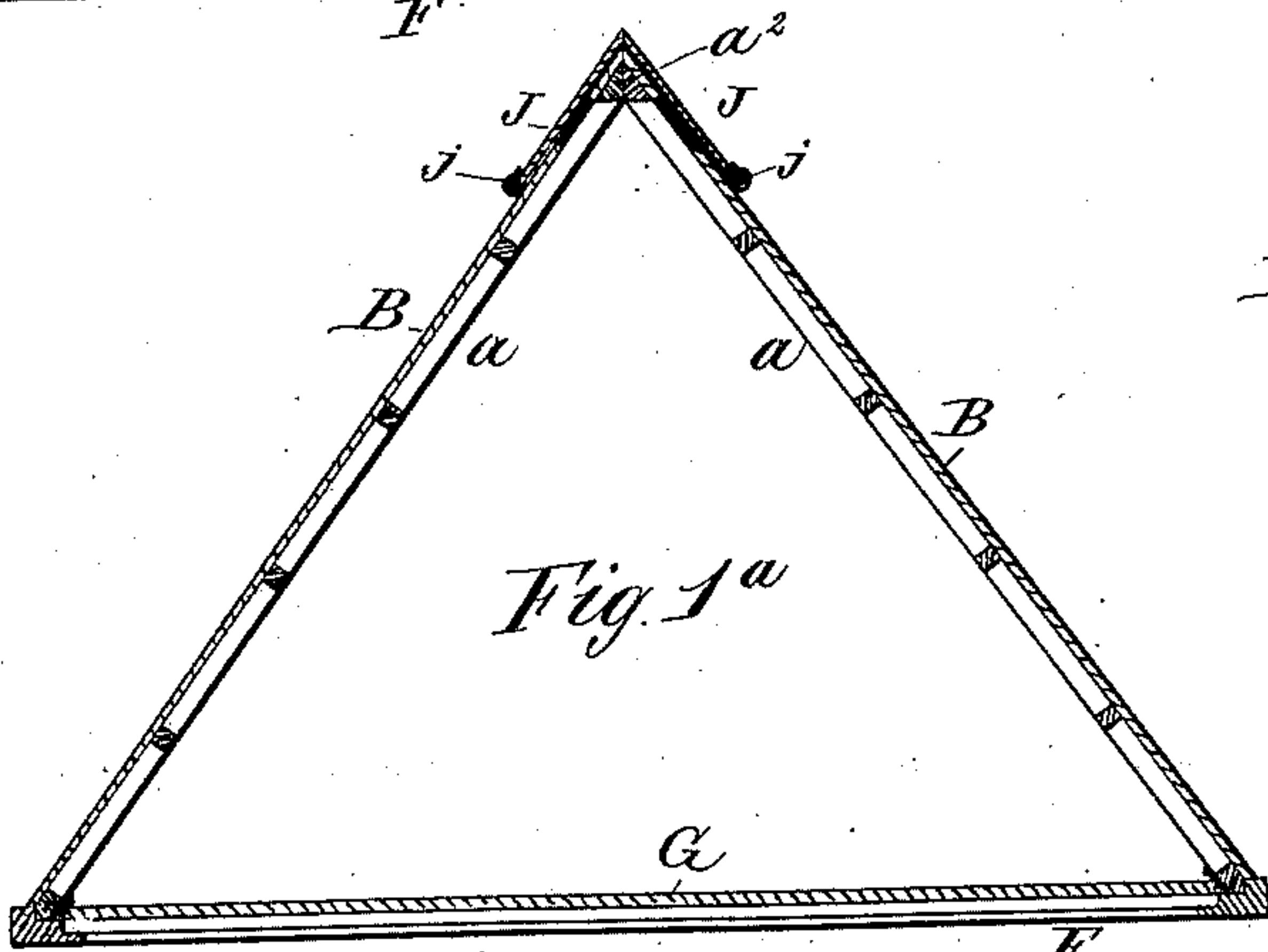


Fig. 1^a

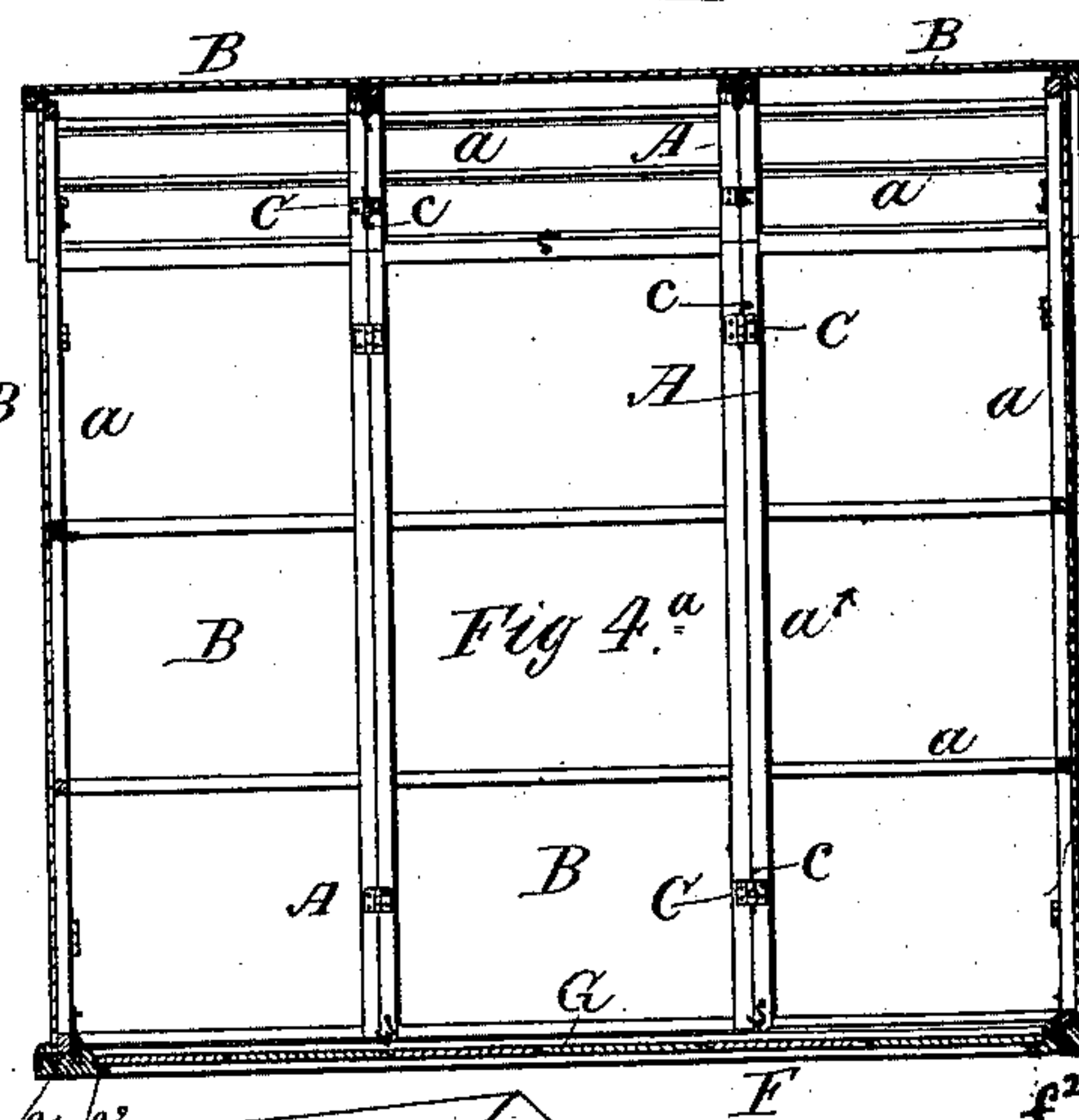


Fig. 4^a

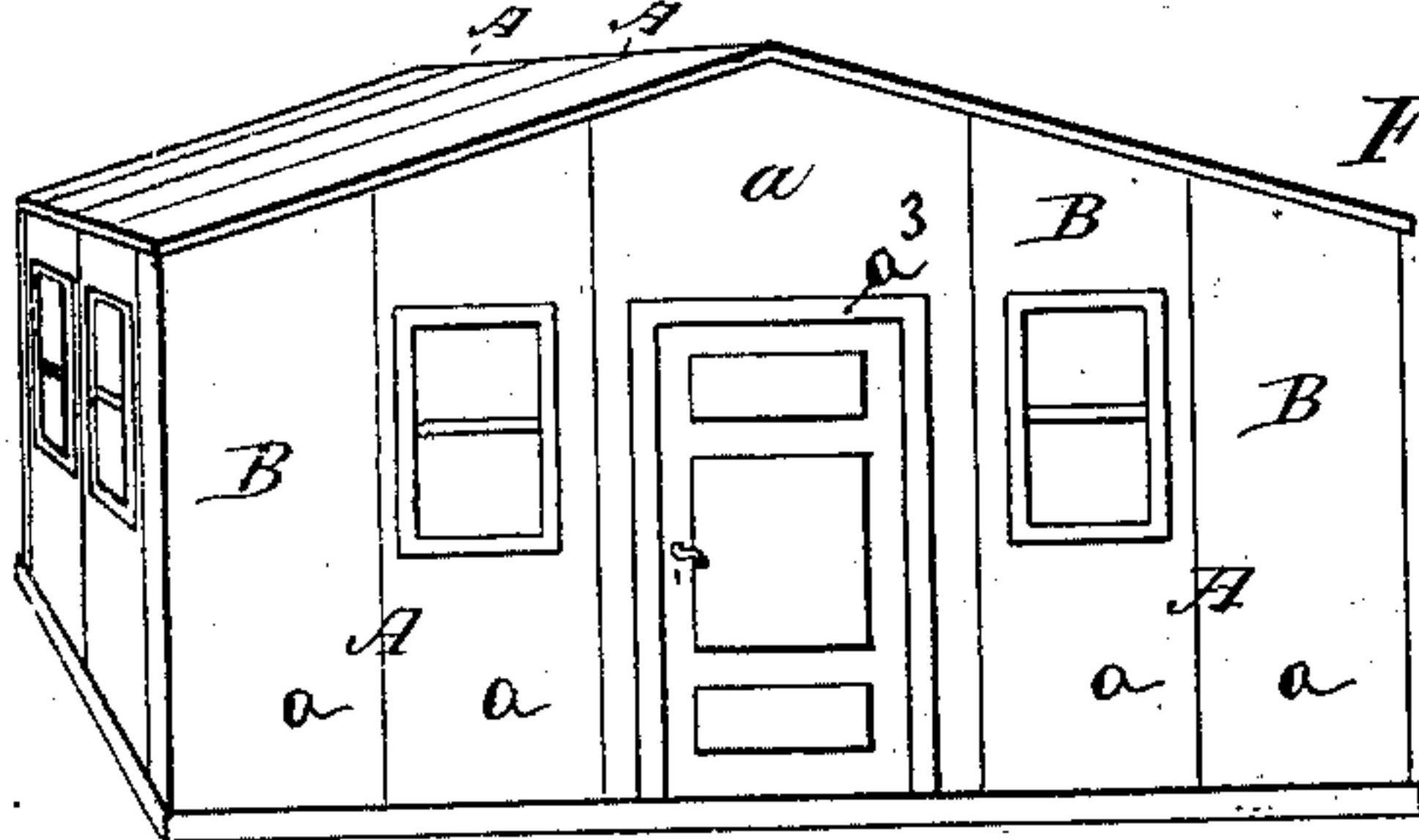


Fig. 3.

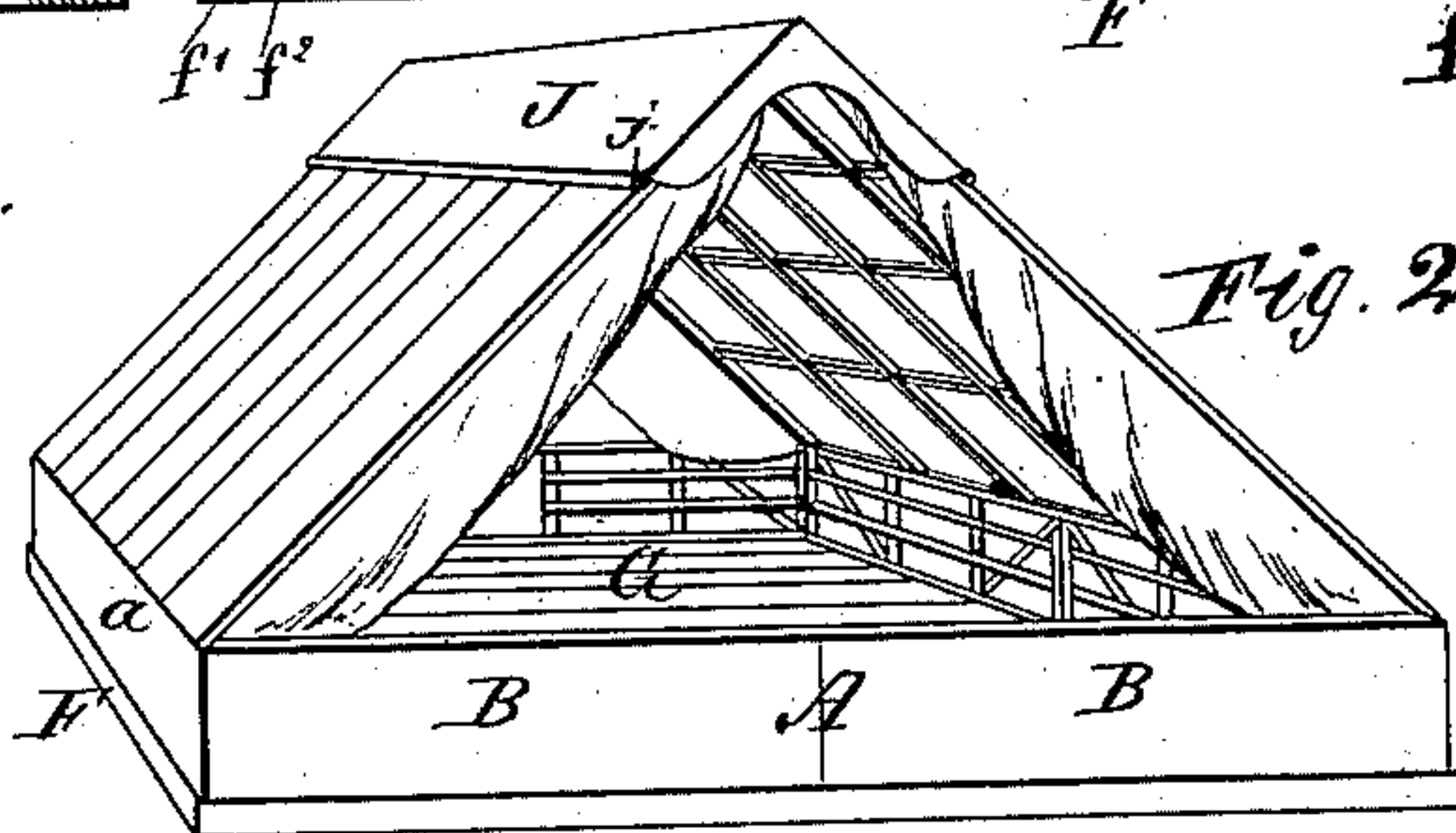


Fig. 2.

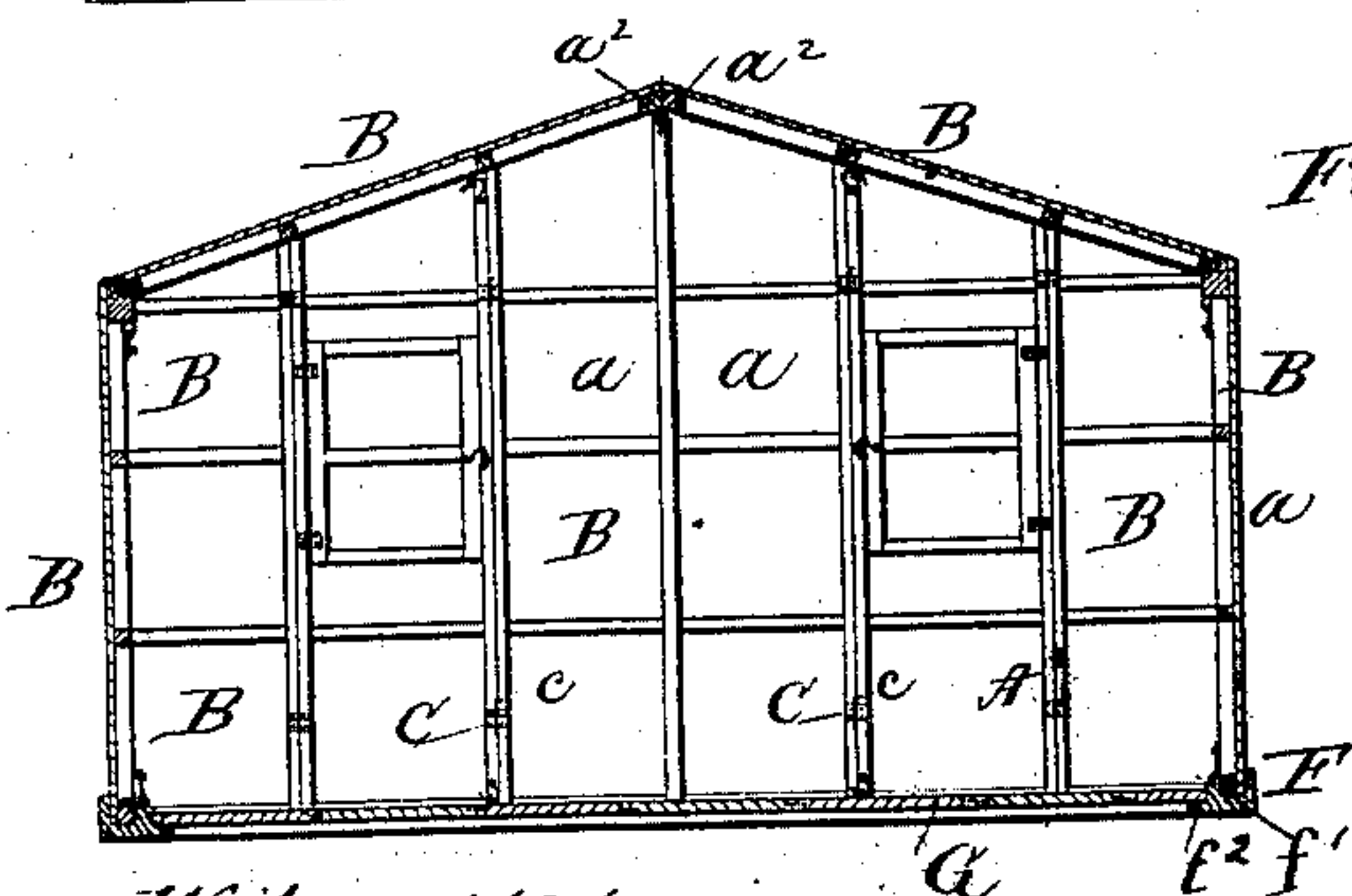


Fig. 3^a

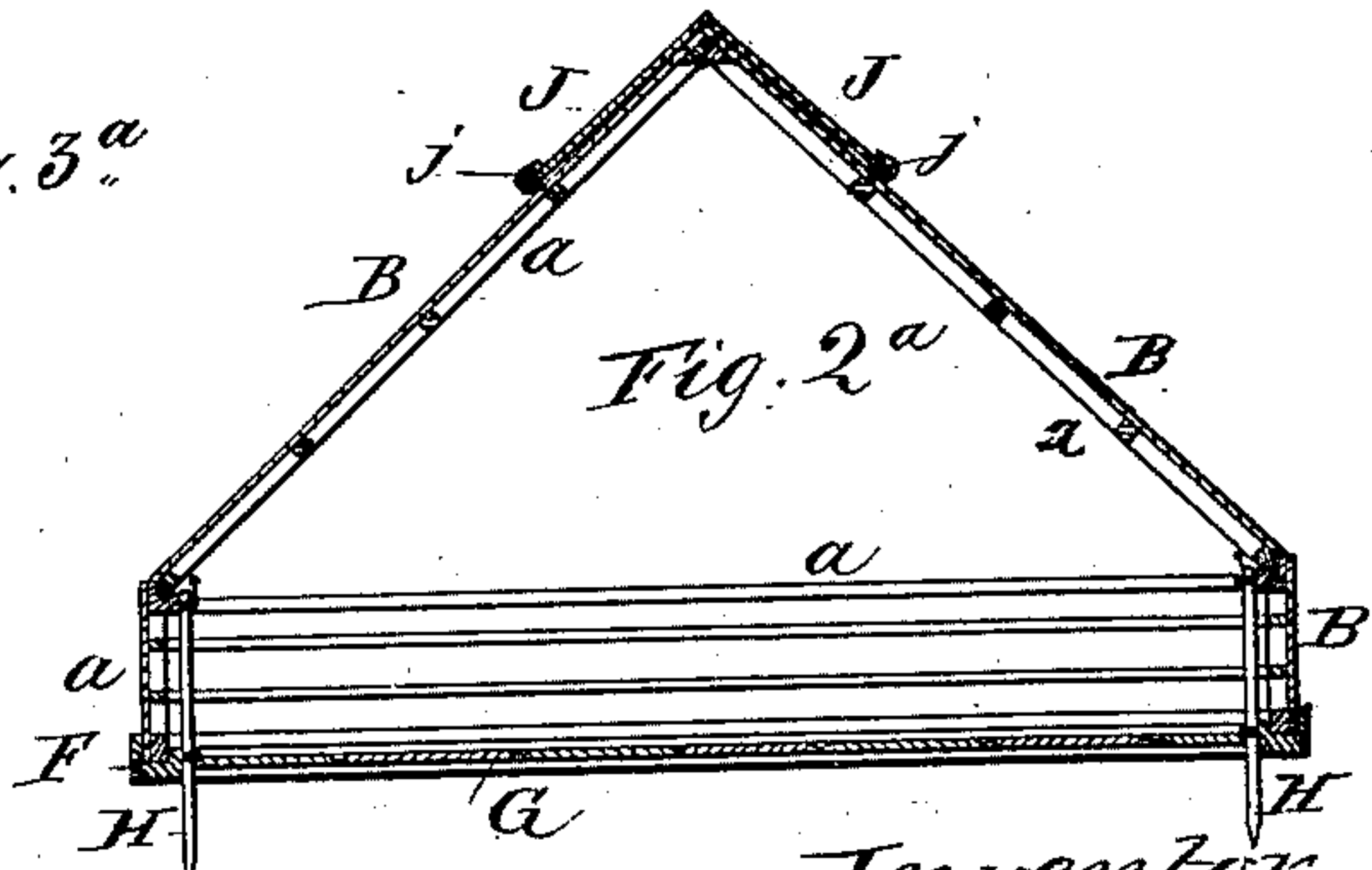


Fig. 2^a

Witnesses
O. G. Sauter.
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Inventor
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(No Model.)

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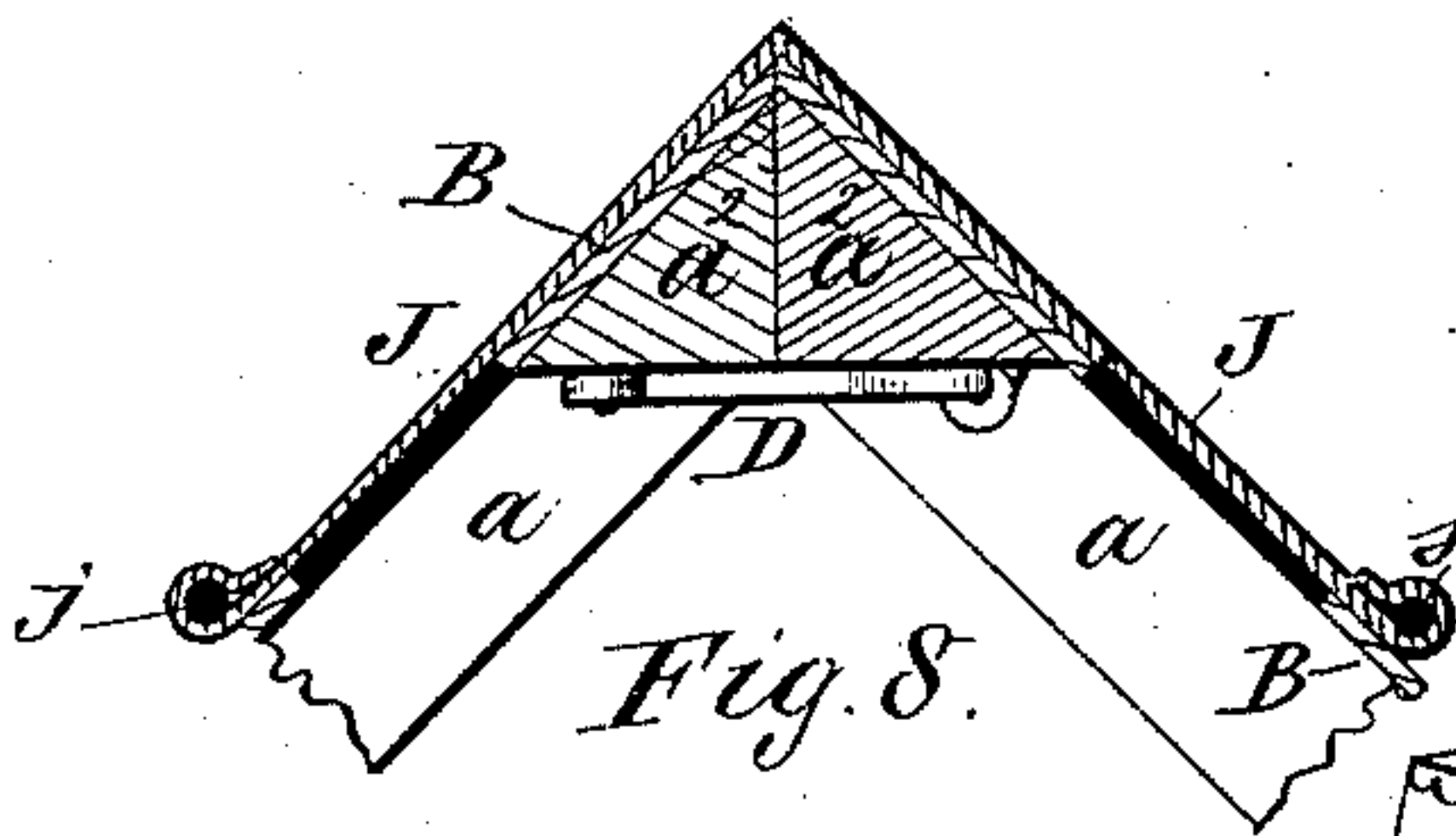


Fig. 8.

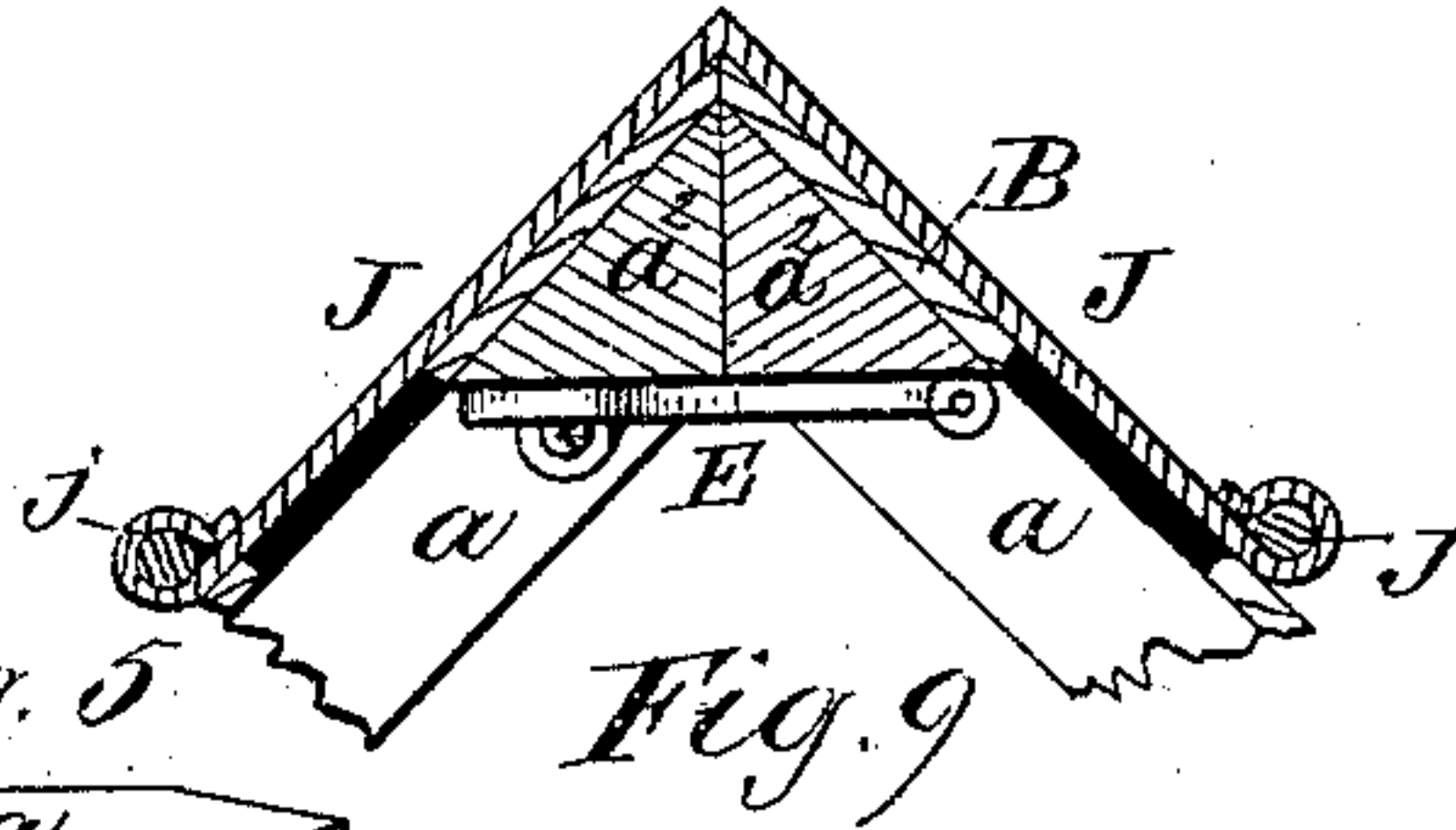


Fig. 9.

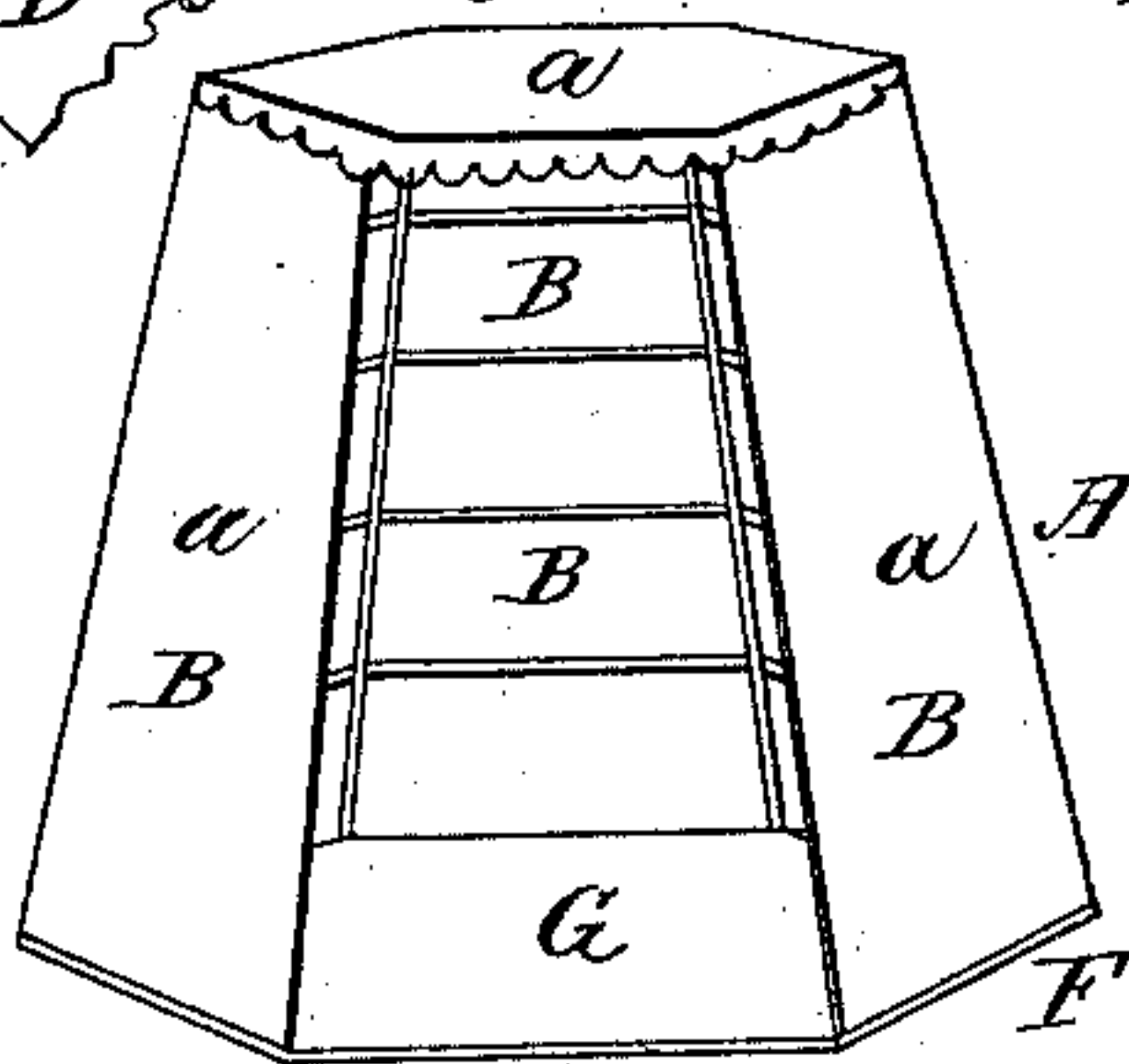


Fig. 5.

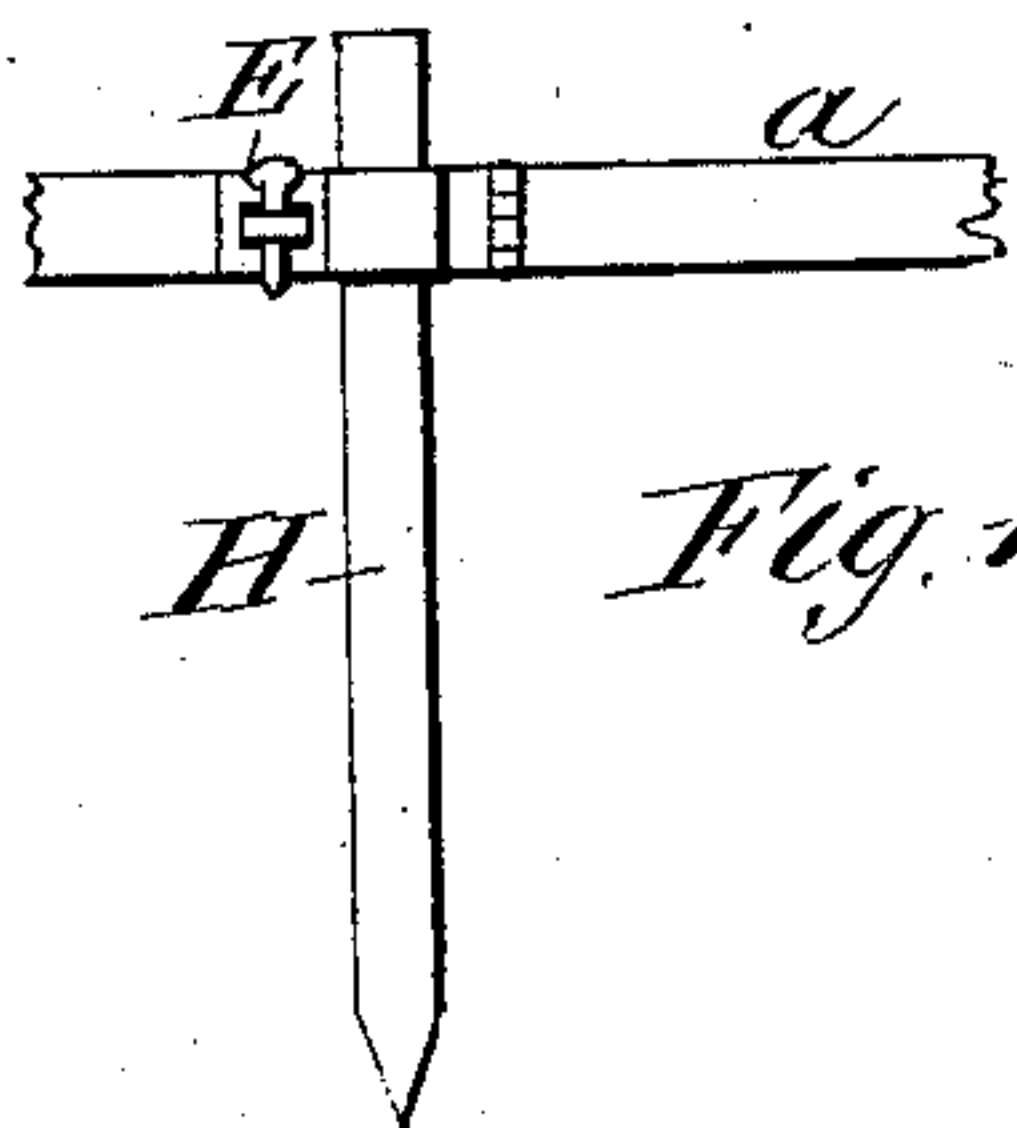


Fig. 10.

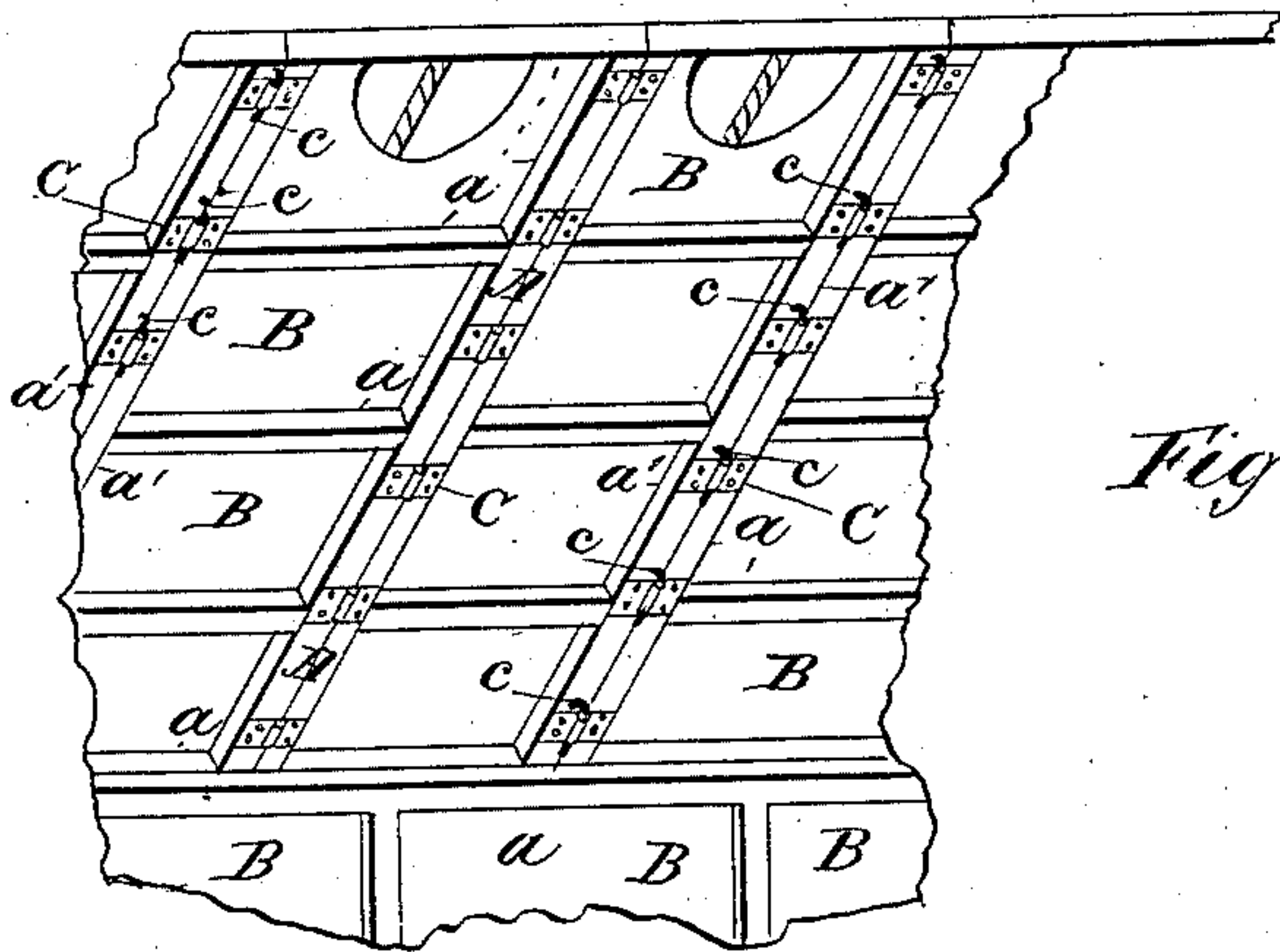


Fig. 6.

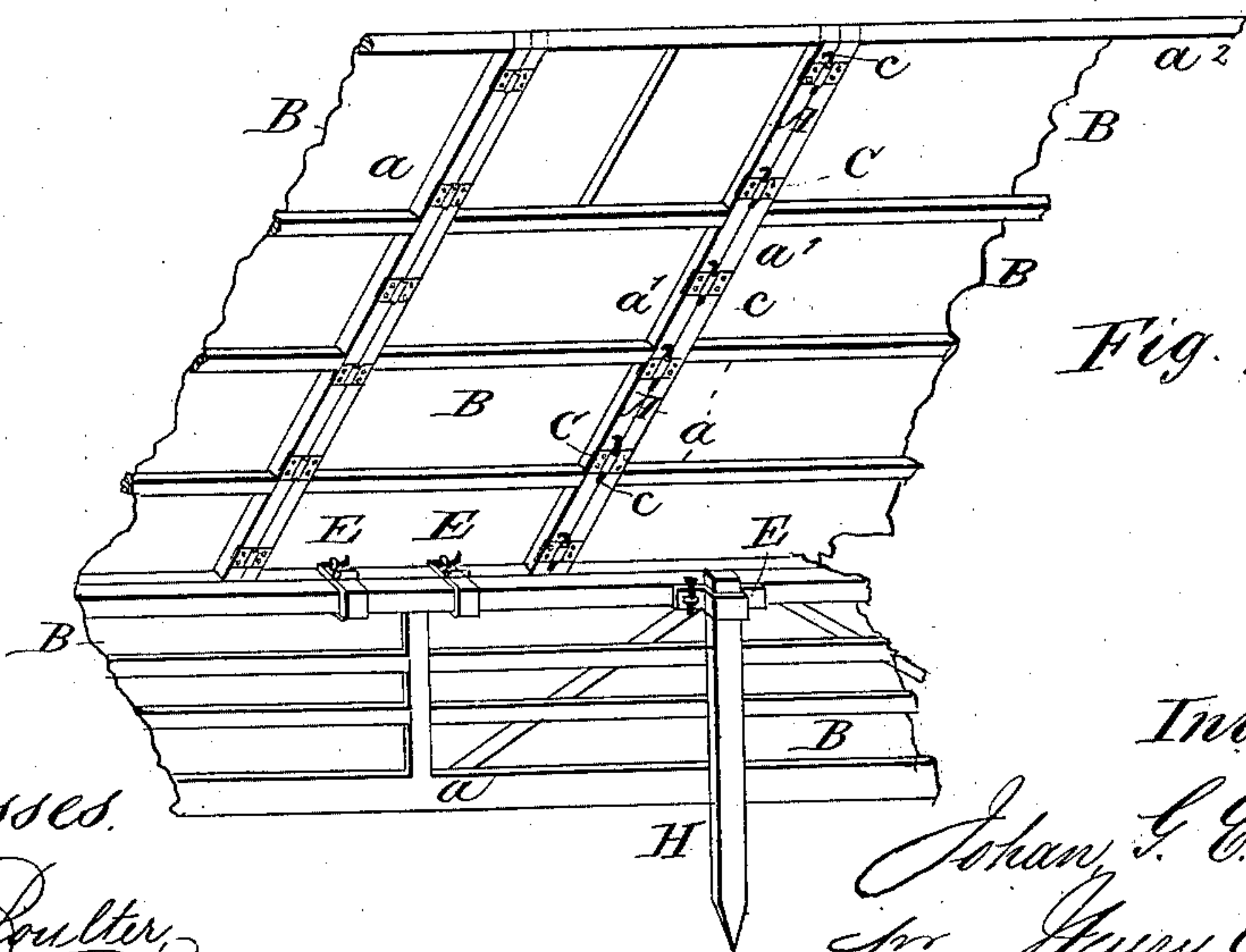


Fig. 7.

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 11.

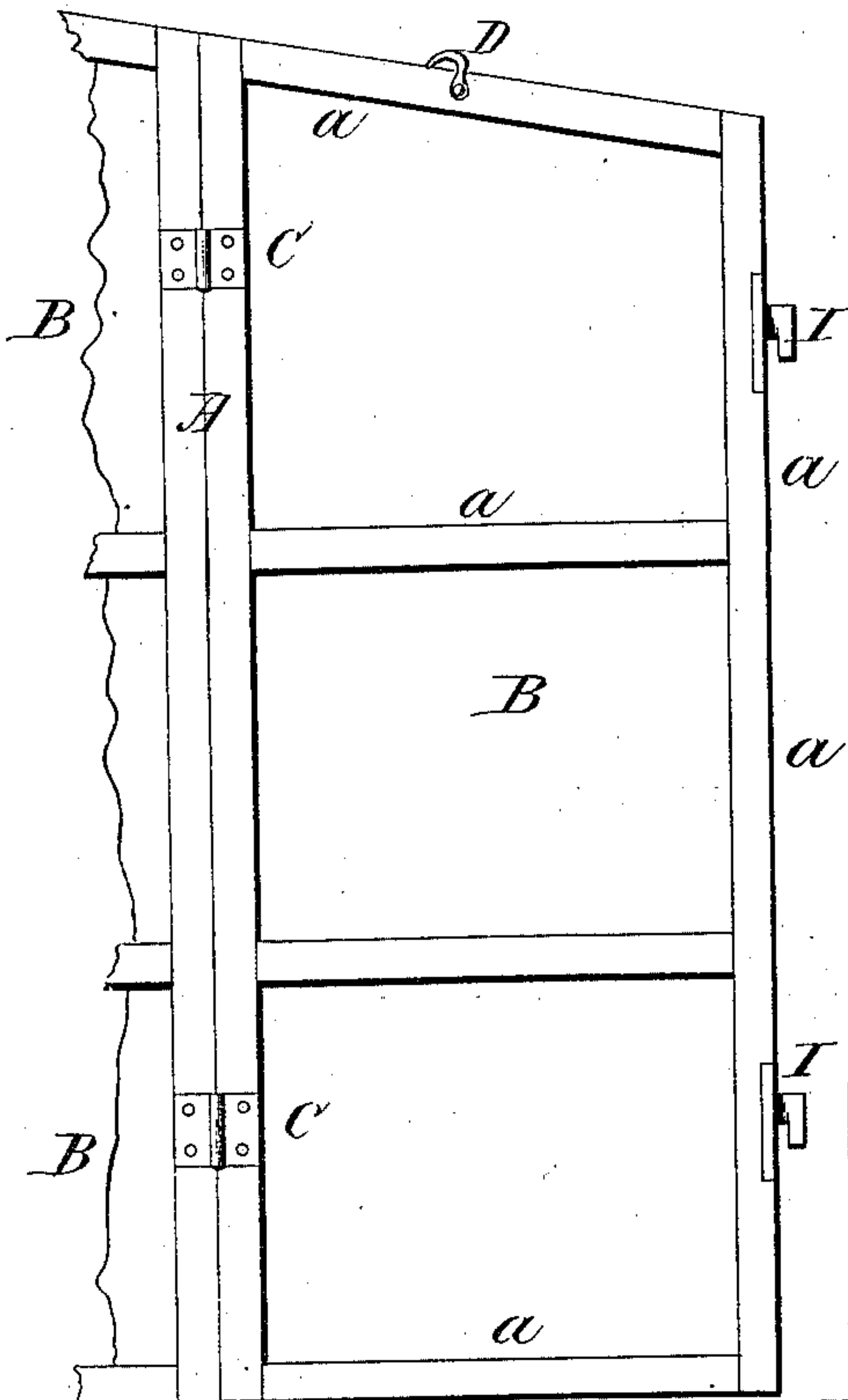


Fig. 12.

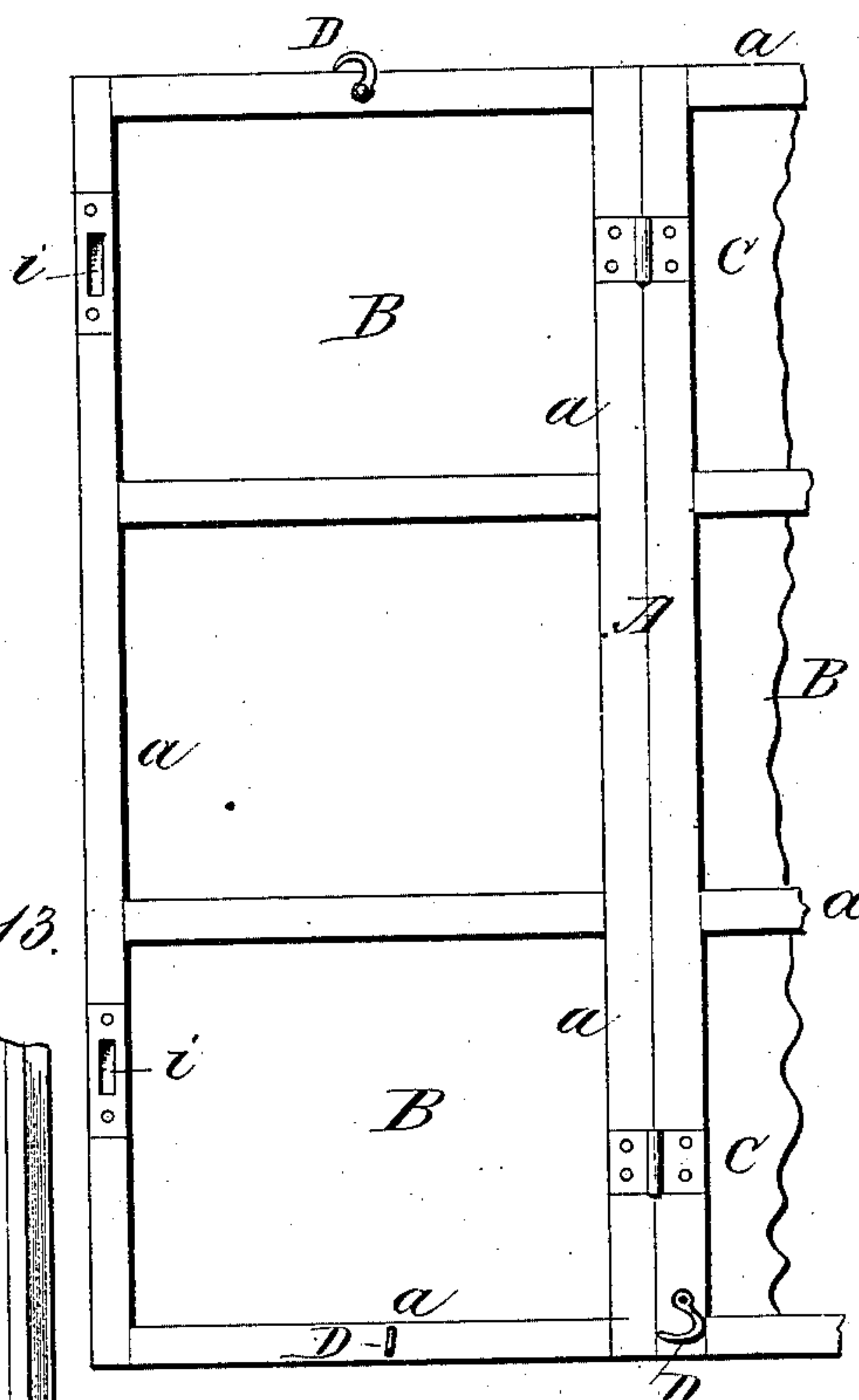


Fig. 13.

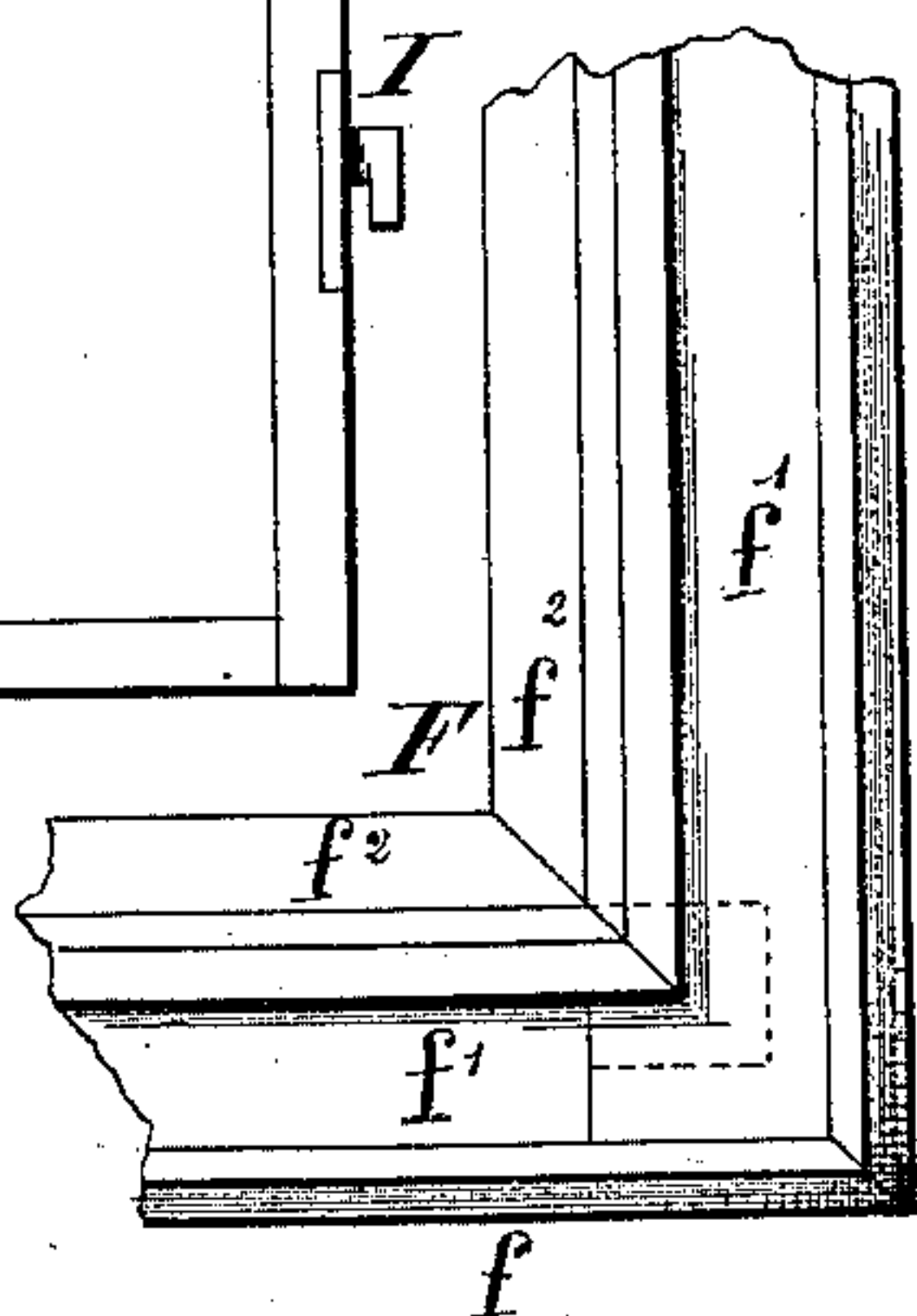


Fig. 14.

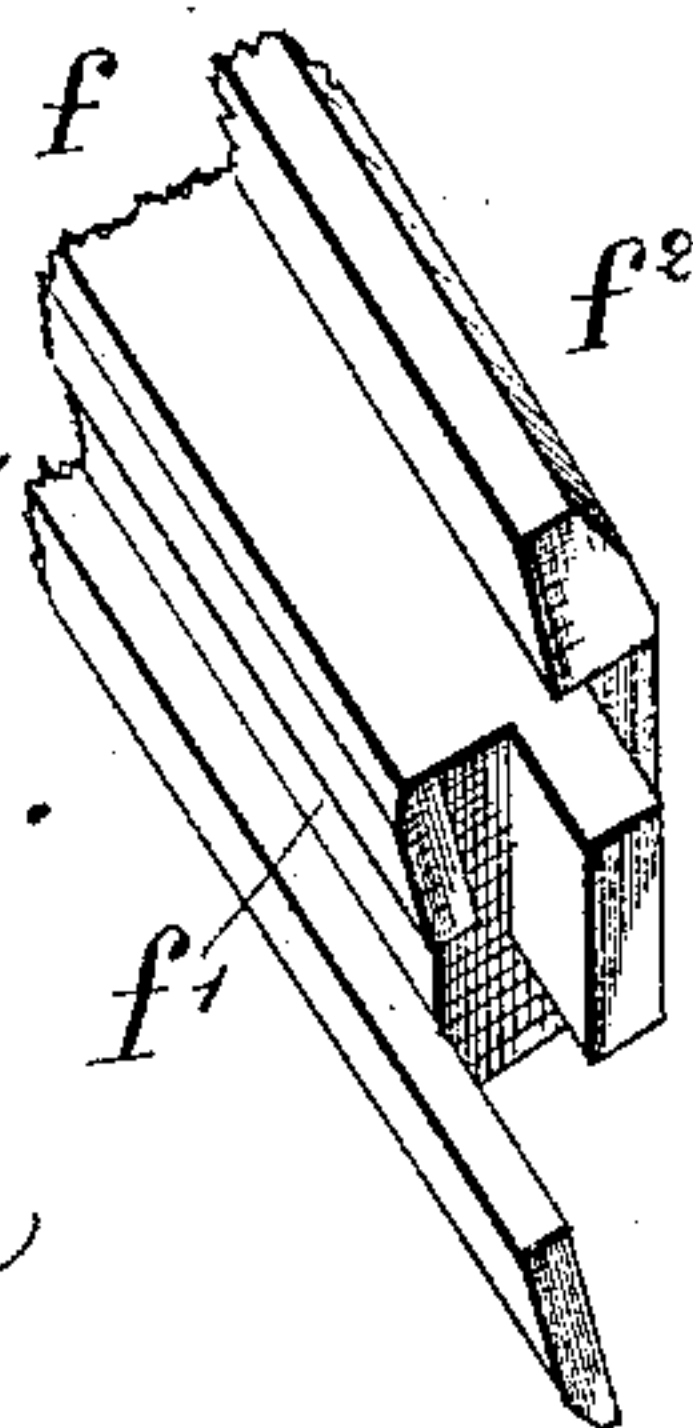
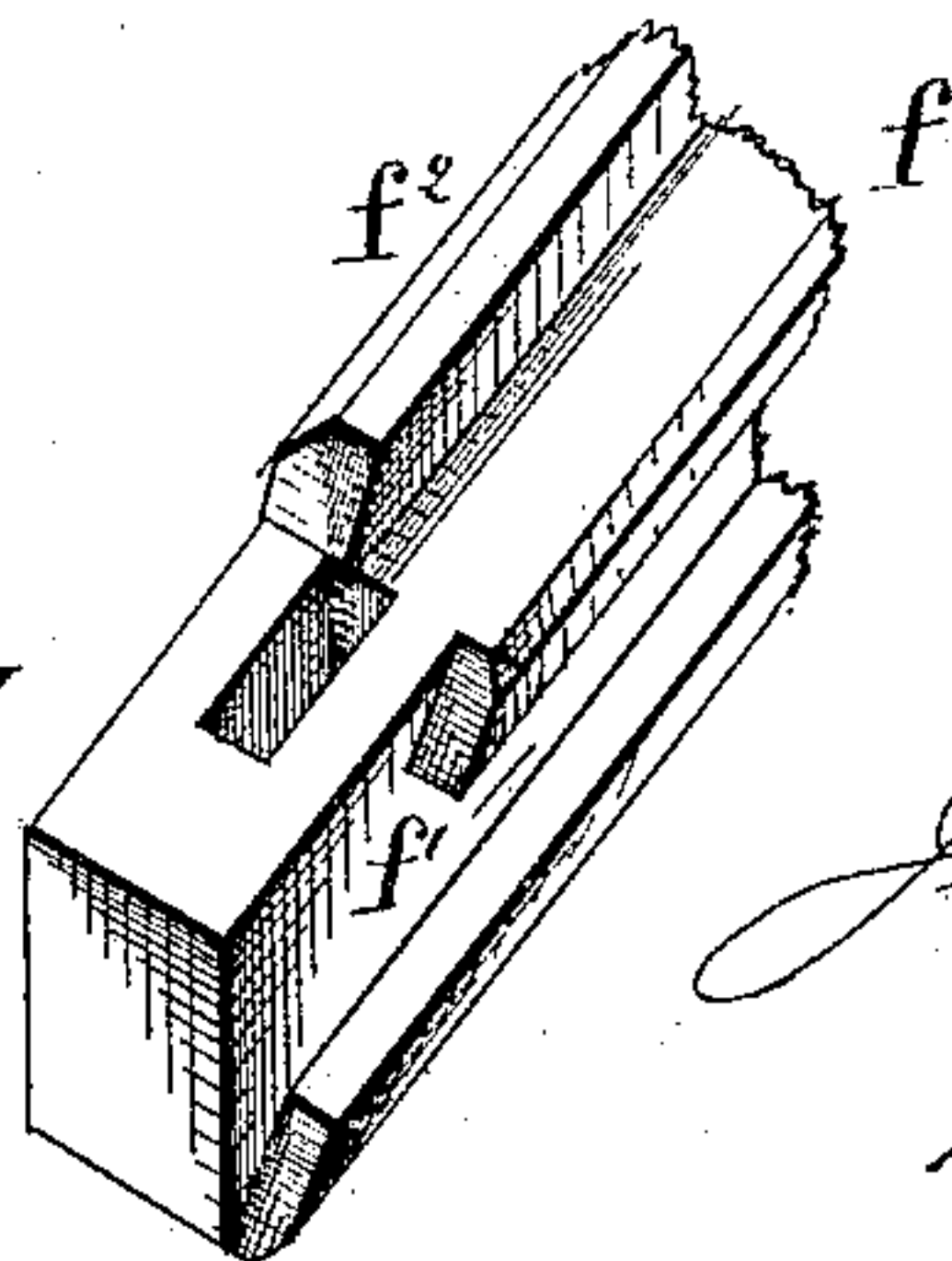


Fig. 15.



Witnesses.

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J. M. Knott

Inventor

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UNITED STATES PATENT OFFICE.

JOHAN GERHARD CLEMENS DÖCKER, OF COPENHAGEN, DENMARK.

PORTABLE STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 308,833, dated December 2, 1884.

Application filed December 18, 1882. (No model.) Patented in France October 2, 1880, No. 138,949; in Germany October 7, 1880, No. 13,972; in Denmark January 21, 1881, No. 1,432; in Austria-Hungary February 28, 1881, No. 3,009 and No. 6,434; in Norway April 21, 1882; in England November 21, 1882, No. 5,530; in Spain December 4, 1882, No. 2,921; in Belgium December 15, 1882, No. 59,714; in Italy December 23, 1882, No. 14,890/16; in Russia February 21, 1883, No. 9,922; in Sweden March 5, 1883; in Victoria December 3, 1883, No. 3,611, and in New Zealand January 11, 1884, No. 994.

To all whom it may concern:

Be it known that I, JOHAN GERHARD CLEMENS DÖCKER, late captain in the Royal Danish Army, a citizen of Denmark, residing at Copenhagen, Sjaelland, Denmark, have invented certain new and useful Improvements in Portable Structures; 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.

The object of this invention is to provide a structure for use either in the military service or for other purposes of such a construction and material as to be light, durable, readily set up or taken down again and adapted to be packed in a comparatively limited space in a close box.

To this end the invention consists, first, in a portable knockdown structure composed of a series of frames hinged together to form panels, each of said frames being covered with an impermeable fabric, preferably felt rendered water-proof and permanently attached to the frames, and means for detachably connecting the panels to one another.

The invention further consists in the combination, with the frames or panels of the structure, of a ground-frame on which said structure is or may be erected, and means for detachably connecting a flooring with said ground-frame.

In the accompanying drawings, Figures 1 and 2 show by perspective views a structure having the form of a tent. Figs. 1^a and 2^a are transverse sections of Figs. 1 and 2 respectively. Figs. 3 and 4 show by like views a structure with a gable and lean-to roof respectively, and Figs. 3^a and 4^a are transverse sections thereof. Fig. 5 shows also in perspective a structure of pyramidal form. Figs. 6 and 7 are perspective views, on an enlarged scale, of a portion of a gable-roof structure as seen from the inside thereof. Figs. 8 and 9

are sections, also on an enlarged scale, of the ridge-pole portion thereof. Fig. 10 is a detail view showing one mode of connecting the retaining pole or peg to the paneled structure. Figs. 11 and 12 show two sections of hinged panels. Figs. 13, 14, and 15 show in perspective one mode of connecting the ground-frame.

Like letters of reference indicate like parts in the above figures of drawings.

My improved portable and impermeable structure is composed of a series of light frames, *a*, which may be made of wood or metal, and for general purposes such frames are polygonal in shape. Each frame *a* is covered with a sheet of impermeable material, *B*, permanently connected therewith in any suitable manner, as by nailing, riveting, or gluing. Two such frames are permanently hinged together by means of any suitable form of hinge, *C*, and a pair of such frames constitute a panel, *A*. The frames are hinged together so as to fold inwardly toward each other, so that their covering will not come in contact when folded. I prefer to cover the frames with strips *B* of felt, which may be rendered water-proof either before or after being attached to the frames, and I prefer the latter method, especially when the felt is attached by means of nails or rivets, for the reason that the points of attachment will then be covered by the waterproofing substance applied, and produce water-proof joints, which would not be the case when the felt is applied after being rendered impermeable. This impermeability may be imparted to the felt by any one of the many waterproofing compositions or water and fire proofing compositions, or by means of oil-paints. I prefer to use felt, owing to its density and non-conductive properties, it being better adapted than any other material to shield the occupants of the structure both from heat and cold. The size of the panels *A*, as well as their outline, will necessarily depend upon the position they occupy in the structure. A polygonal form will answer for nearly all forms of structures. For instance,

in the construction of a structure like that shown in Figs. 1 1^a and 2 2^a, the sloping sides of the tent may be composed of three or more of the panels A, each according to the depth the tent is to have. For instance, by making each frame of a width of eighteen inches three panels of six frames would give a depth of tent of nine feet, which is about the depth of tent usually employed for military services in the field.

For winter-quarters, instead of three panels, four to five of such panels may be used. Where two panels are connected together, the side bars, *a'*, of the frames *a* are provided with hinges, the pintles C of which are made removable, as shown in Figs. 3^a, 4^a, 6, and 7, so that the panels may be readily disconnected when the tent or other structure is to be struck. The upper transverse bars, *a''*, of the frames *a* of the panels that form, when united, the ridge-pole of the tent or gable-roof structure, are triangular in section, as more plainly shown in Figs. 8 and 9, and are connected together, either by means of hooks and staples D, as shown in Fig. 8, or by means of hasp, staple, and pin E, as shown in Fig. 9, each frame *a* being provided with such fastening, so as to form a safe and solid connection of the panels at the ridge of the structure. These panels may be erected on the ground, and secured by stakes in any desired manner for more temporary purposes—as for field-tents. When the structure is to be more permanent—as, for instance, for winter-quarters or for summer-houses—I prefer to set the panels on a ground-frame, F, that is connected at the corners by any suitable interlocking joint, a form of such joint being shown in Figs. 13, 14, and 15, though any other desired means of connecting the bars of the frame may be employed. Each bar *f* is provided with a groove or ledge, *f'*, upon or in which rests the lower ends of the frames *a* of the panels A, as shown in Figs. 1^a, 2^a, 3^a, and 4^a, and are connected at that point to the frame F by means of hooks and staples D, or other fastenings.

For the more permanent structures I prefer to provide a flooring, G, for which purpose the frame F is provided on its inner sides with a ledge, *f''*, Figs. 2^a, 3^a, 4^a, 13, 14, and 15, on which the floor-planks are laid. The tent structure may also rest on a vertical wall composed of panels A or frames *a*, according to height of such wall, laid lengthwise.

In Figs. 2 and 2^a I have shown such a structure in which the wall is composed of single frames hinged together in pairs at their ends, said frames resting either on the ground or on a ground-frame, F, as shown, the upper longitudinal bars of the frames *a* being constructed to form suitable bearings for the inclined roof-panels A of the structure, as shown. To impart greater solidity to this form of structure, the vertical walls are staked down by means of stakes H, connected to the frame-bars by means of hasp, staple, and pin E, as more clearly shown in Figs. 7 and 10, and the

inclined roof-panels A are connected with the vertical wall-panels by means of hooks and staples or other convenient fastenings. The sides and ends of the structure (when such is inclosed on all sides) are connected together, as shown in Figs. 11 and 12, the vertical bars of the adjacent frames *a* being provided, one with hooks I, and the other with recesses covered by a slotted plate, *i*, with which said hooks I are adapted to engage, as plainly shown in Figs. 11 and 12.

For purposes of ventilation holes may be cut into the felt covering B in some of the squares of the frames along the ridge-pole, or one or more of said squares may be left uncovered, as shown in Figs. 6 and 7.

To prevent access of rain the ridge-pole is covered by a felt hood, nailed or otherwise secured in sections to the ridge-pole transverse bars of each frame, and weighted down by means of iron rods secured to the free edge of the hood. The hood J may also be made of a single piece of impermeable felt, and placed loosely over the ridge of the tent, said hood being held in place by weighting its free edge by means of iron rods *j*, as more plainly shown in Figs. 8 and 9.

The advantages of structures of the class described will readily be understood. They can be constructed at a comparatively small expense; the occupant thereof is thoroughly protected against the inclemency of the weather; they may be erected or taken down with great rapidity or stored in a comparatively small space, and they are not liable to decay, the panels being hinged together, so as to bring the uncovered framing in contact, instead of the covering thereof.

In Fig. 1 I have shown a box, K, into which the panels that constitute the tent may be packed, said box serving when not in use as a table or locker for the occupant. The advantages derived from such packing in close boxes will be readily understood, especially in conjunction with tents for field use, as an ordinary canvas tent may be rendered practically useless in the course of a few days by the heat developed when circumstances necessitate its being struck and packed in the usual manner while wet. The destruction from this cause of tents constructed and packed as described is practically impossible, as there is ample air-space between the felt covering of the frame. Another great advantage in this construction lies in the fact that the material used for covering the structure is never folded, creased, or otherwise so handled as to tend to break its fibers or threads. Each sheet of felting always lies smoothly stretched on its frame, and is thus shielded from injury.

In Figs. 3 and 3^a I have shown a gable-roof structure constructed upon the principles hereinabove described, and provided with doors and windows, the walls and roof being composed of a series of panels, A, the apertures for the doors and windows being formed in the frames *a* by leaving the necessary space

uncovered, the doors and windows being hinged to the framing and held closed by latches or hooks and staples, or other devices usually employed for this purpose.

5 The door-frame a^3 , Fig. 3, is made of sufficient width and is detachably connected with the adjacent wall-panels A, as hereinbefore described. The vertical walls are secured to the ground-frame F by means of hooks and staples D, and on their upper end is laid the roof of the structure and secured to the wall-panels in a similar manner.

10 In Figs. 4 and 4^a I have shown a lean-to-roof structure constructed on the same principles, and in Fig. 5 a pavilion.

15 I have shown and described means for connecting the hinged panels together to form tent or vertical walls, as well as means to connect the latter to a gable or lean-to roof. I have also shown and described the structure erected upon and connected with a ground-frame and provided with flooring. I desire it understood, however, that I do not limit myself either to a specified form of structure or to specific means for connecting the parts thereof together to adapt the same to be readily disconnected and packed or stored in a compact form.

20 To any builder or person conversant with the art to which this invention appertains various means known in this branch of the arts will readily suggest themselves for connecting the frames or panels, and with a specific plan or form of building he will be enabled to construct his panels and frames.

25 The primary object of this invention is to produce a light, impermeable, portable or knockdown structure composed of frames a , each of which has its own covering, of an impermeable material, permanently attached

thereto, whereby a covered structure is provided, when the frames or panels are erected into such, which will protect the occupant against the inclemencies of the weather, and whereby said structure may at any time be taken down and compactly stored or packed away.

I am aware that portable or knockdown structures have heretofore been known and used, and I do not desire to claim such, broadly; but I am not aware that structures of this class, composed of sections covered each with an impermeable covering, have heretofore been known or used; and

What I claim is—

1. A portable or knockdown structure composed of a series of frames each covered with an impermeable fabric permanently attached thereto, and hinged together in pairs to form panels A, and means for detachably connecting said panels to one another, substantially as described, for the purpose specified.

2. A portable or knockdown structure composed of a series of frames, a , each covered with water-proof felting permanently attached thereto, said frames being hinged together in pairs to form panels A, a ground-frame on which said structure is erected, means for detachably connecting the panels with one another and with the ground-frame, and means for detachably connecting a floor with said ground-frame, substantially as described, for the purpose specified.

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

JOHAN GERHARD CLEMENS DÜCKER.

Witnesses:

AUG. FLADMARK,
A. STEENBERG.