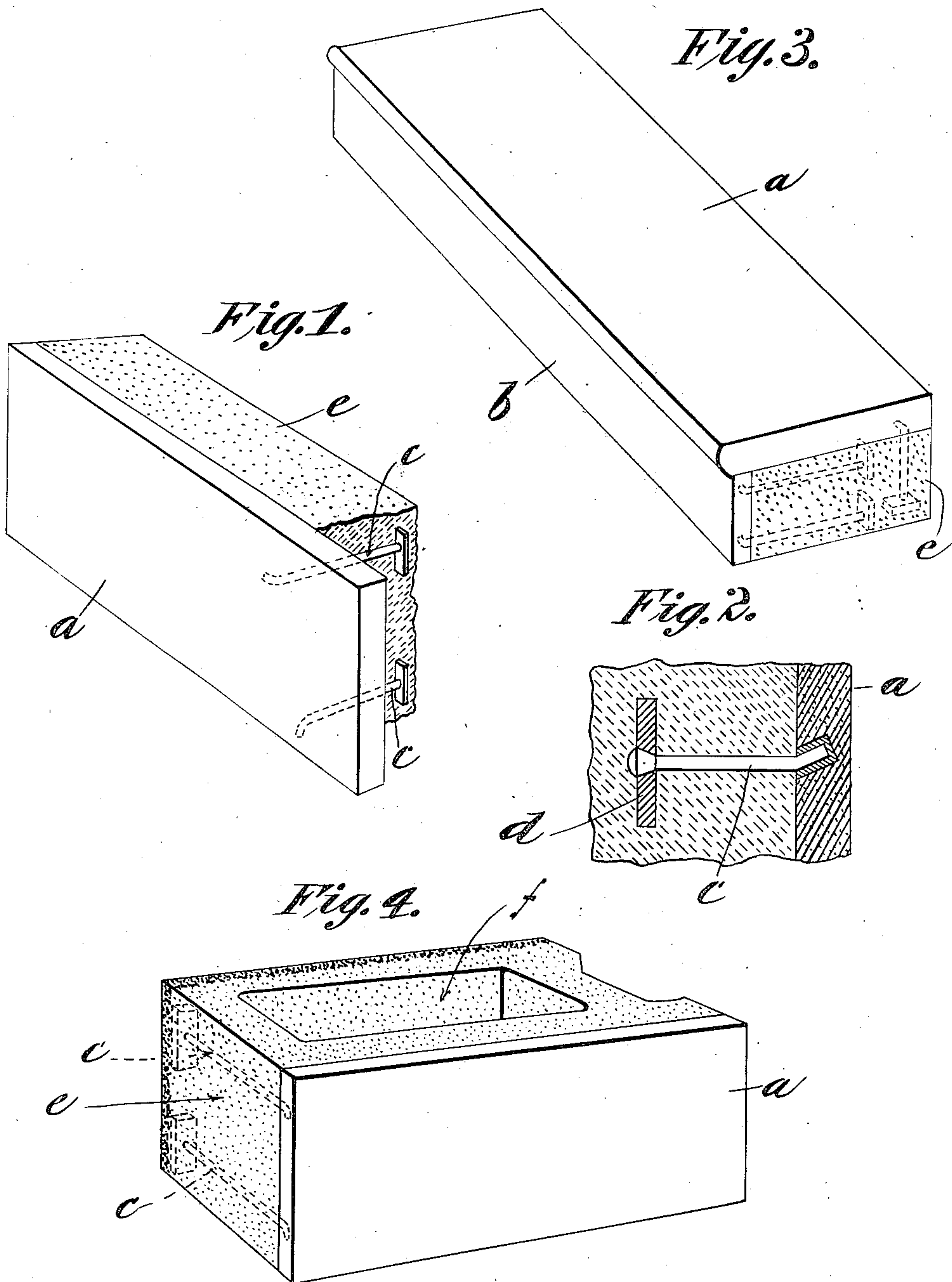


No. 856,176.

PATENTED JUNE 4, 1907.

J. MUIR.  
COMPOSITE BUILDING BLOCK.  
APPLICATION FILED DEC. 5, 1904.

4 SHEETS—SHEET 1.



Witnesses:  
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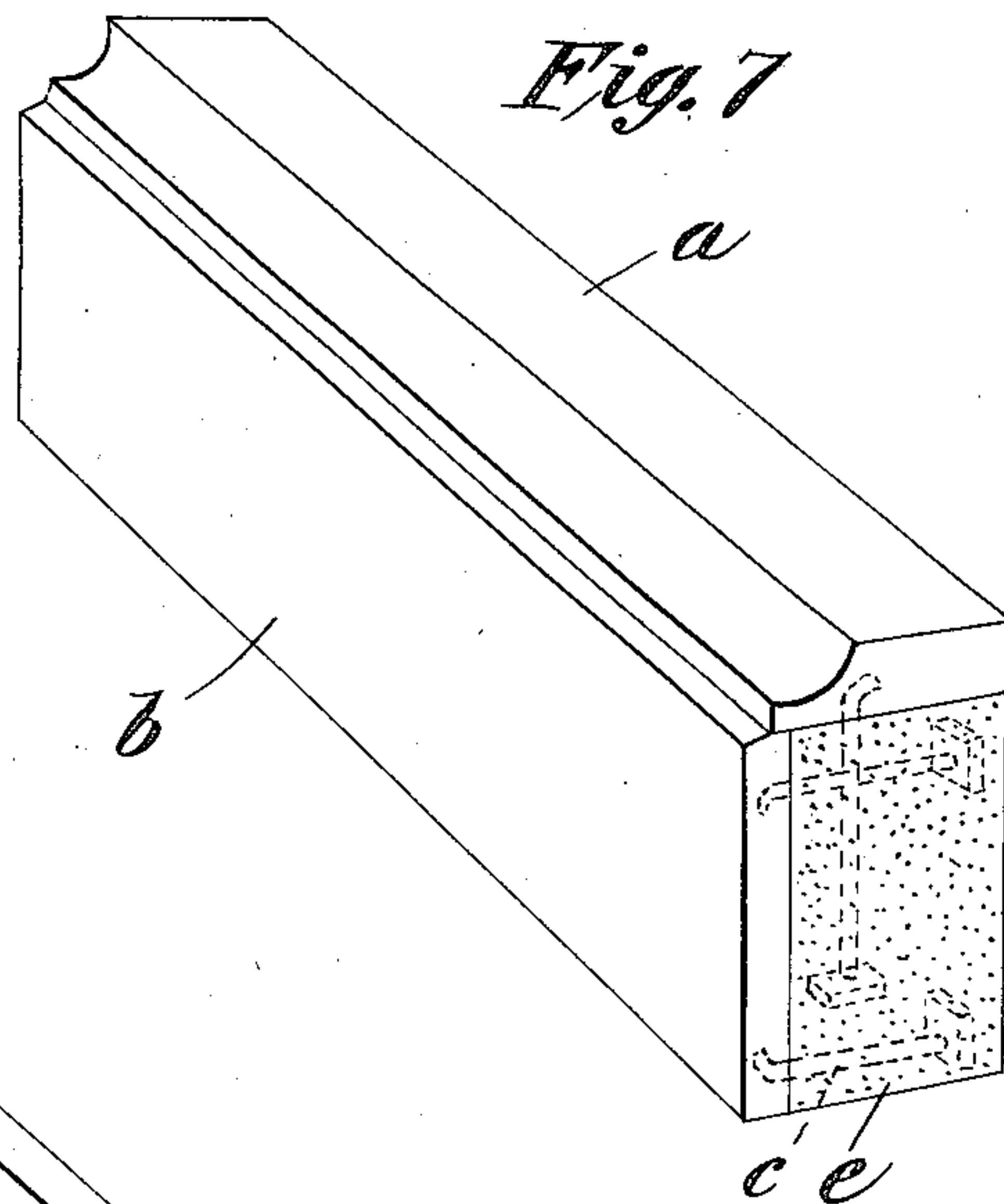
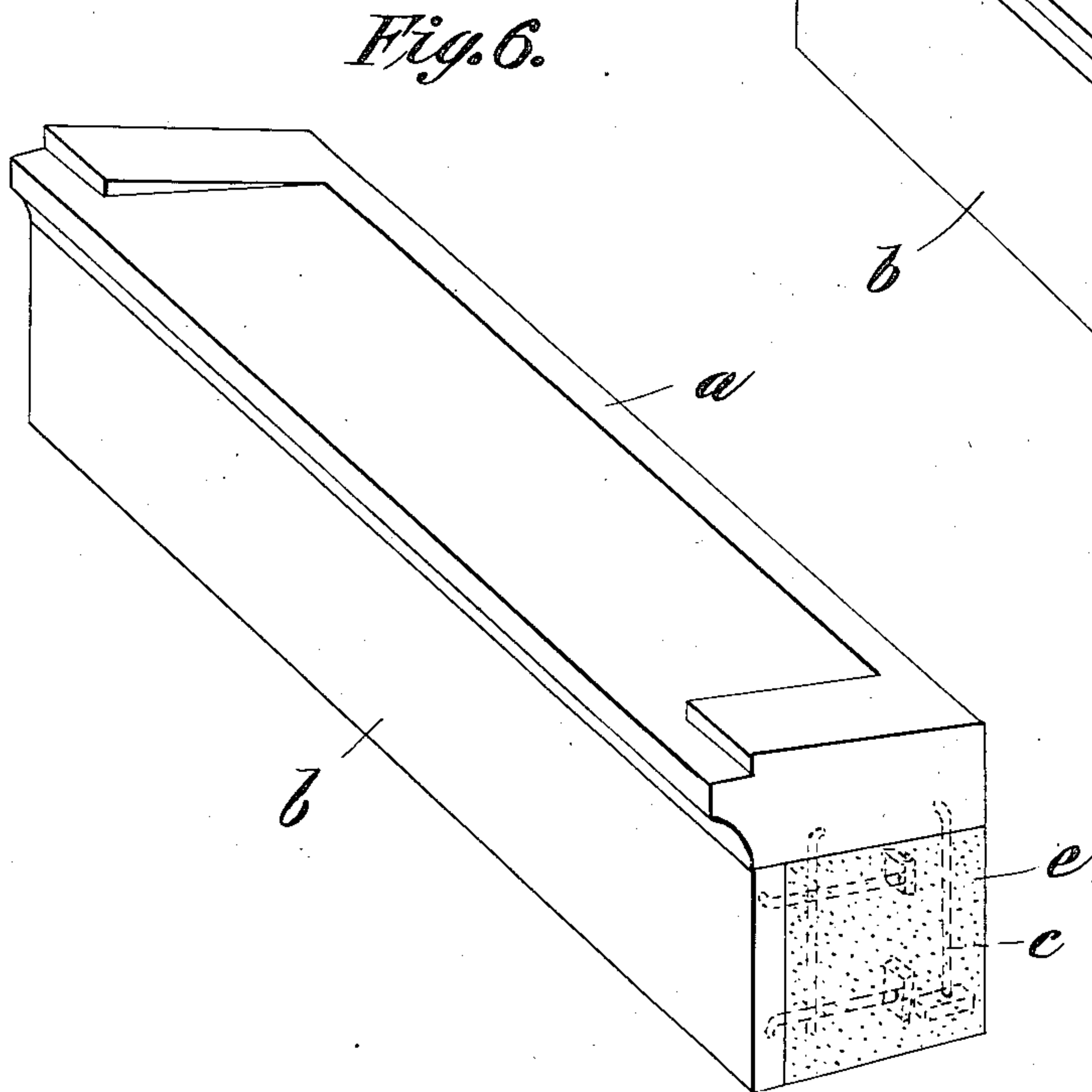
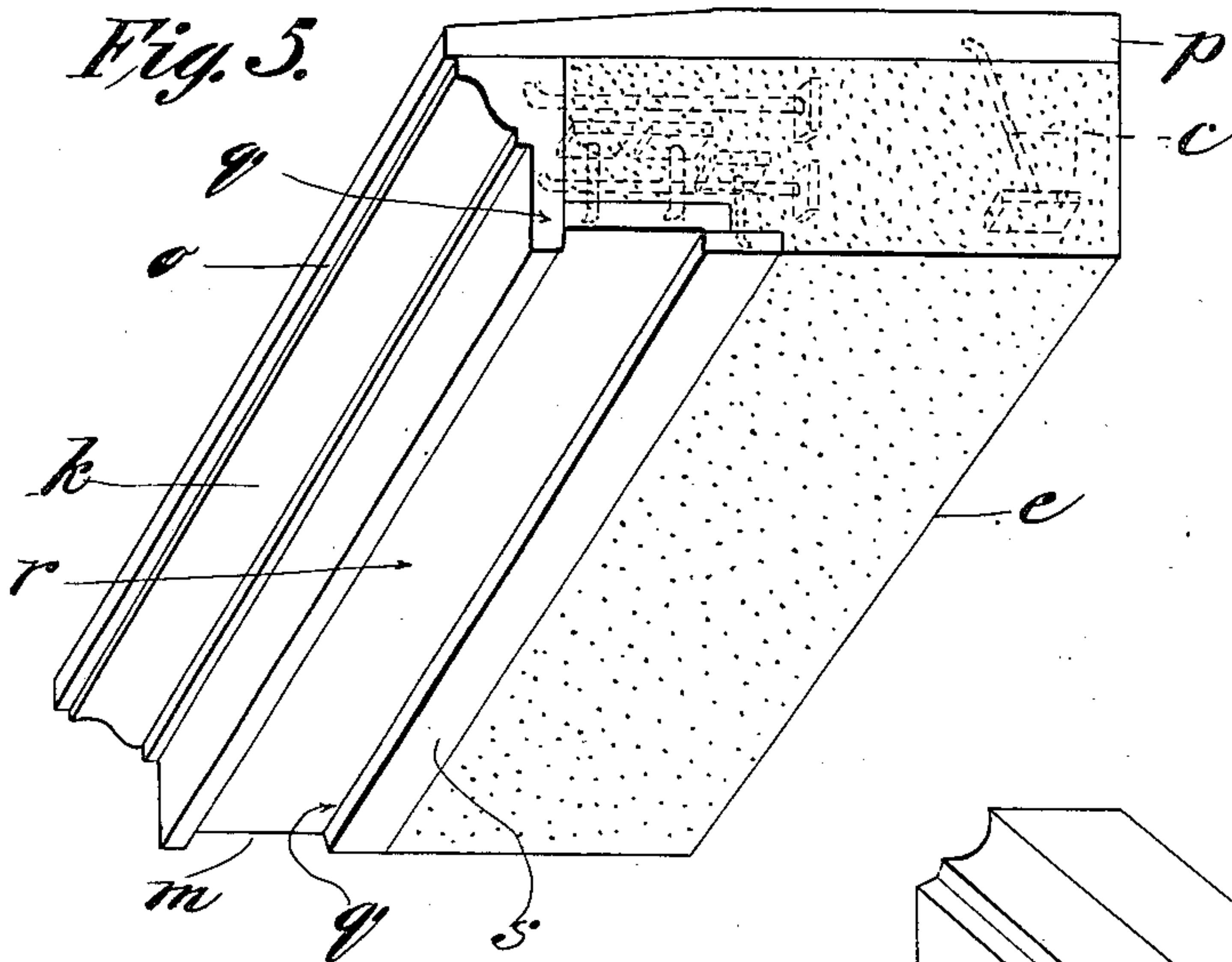
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4 SHEETS—SHEET 2.



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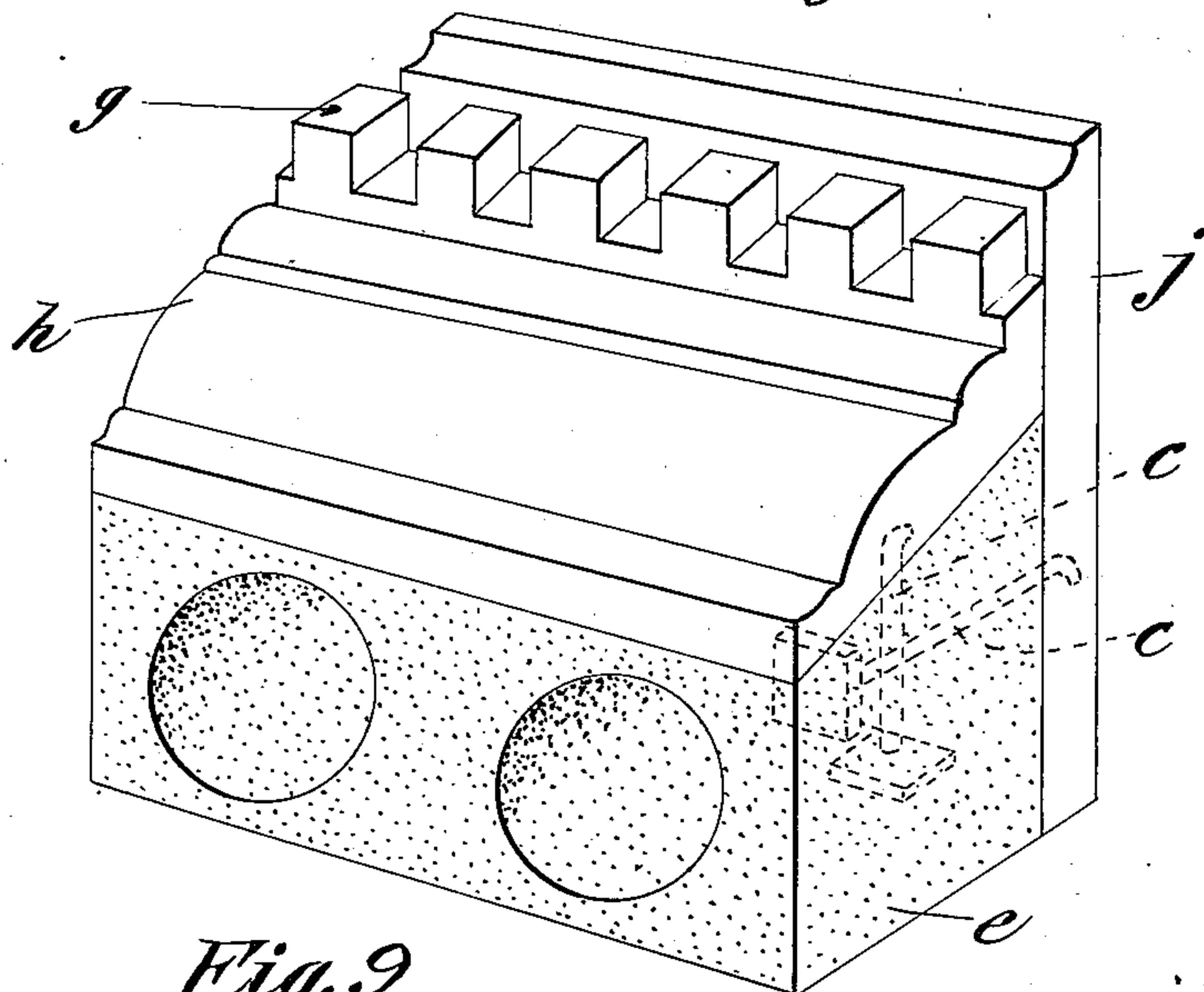
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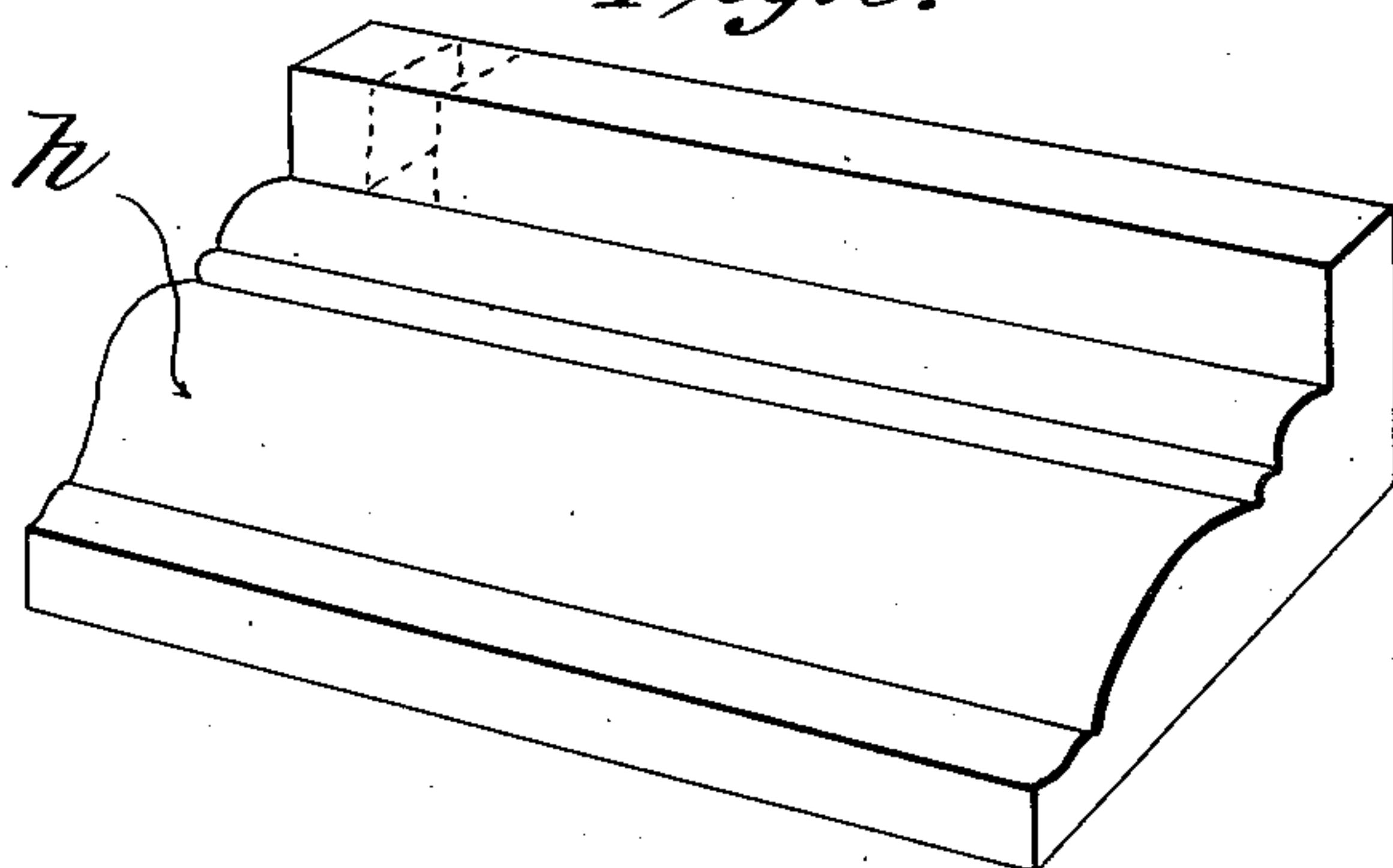
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4 SHEETS—SHEET 3.

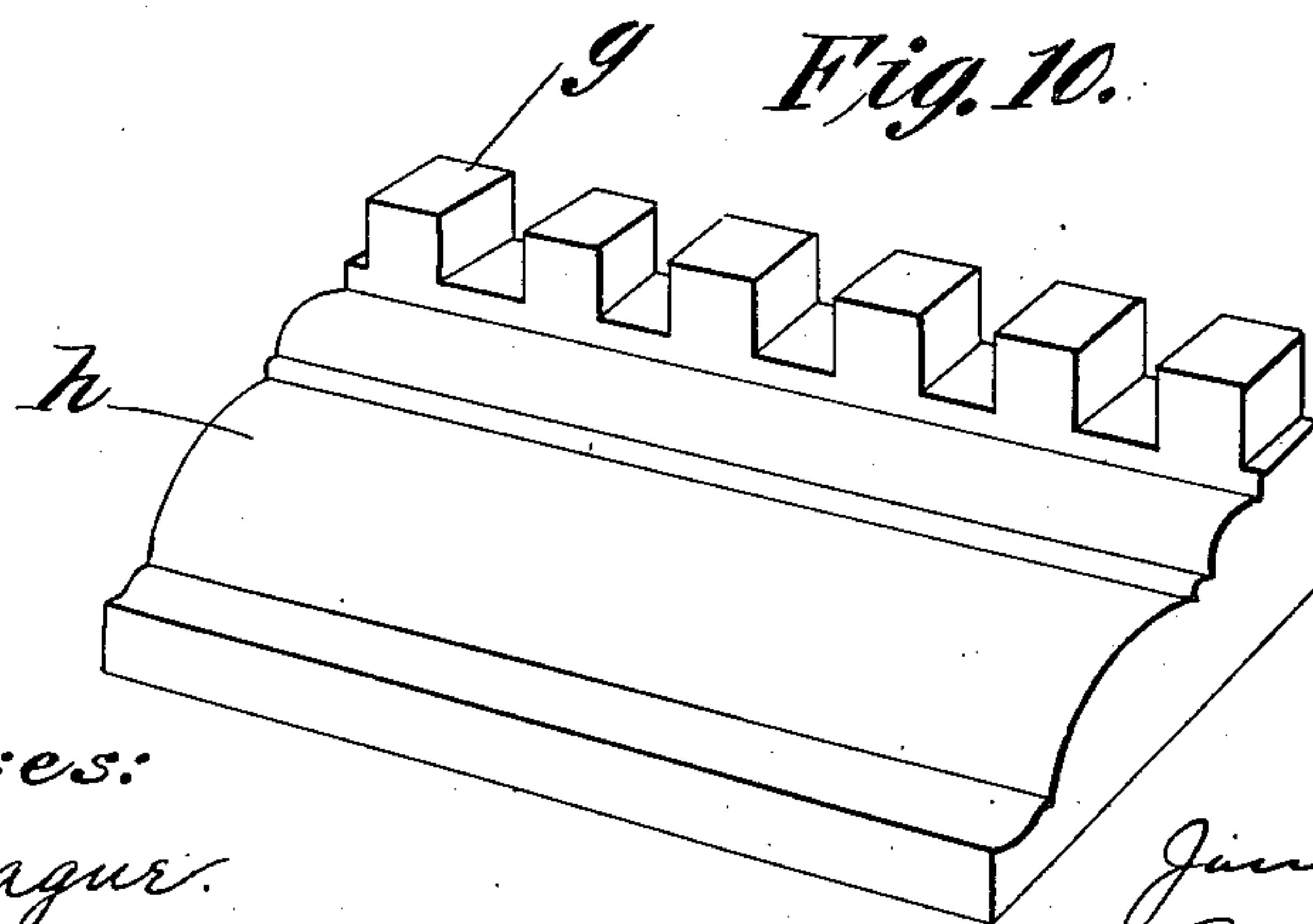
*Fig. 8.*



*Fig. 9.*



*Fig. 10.*



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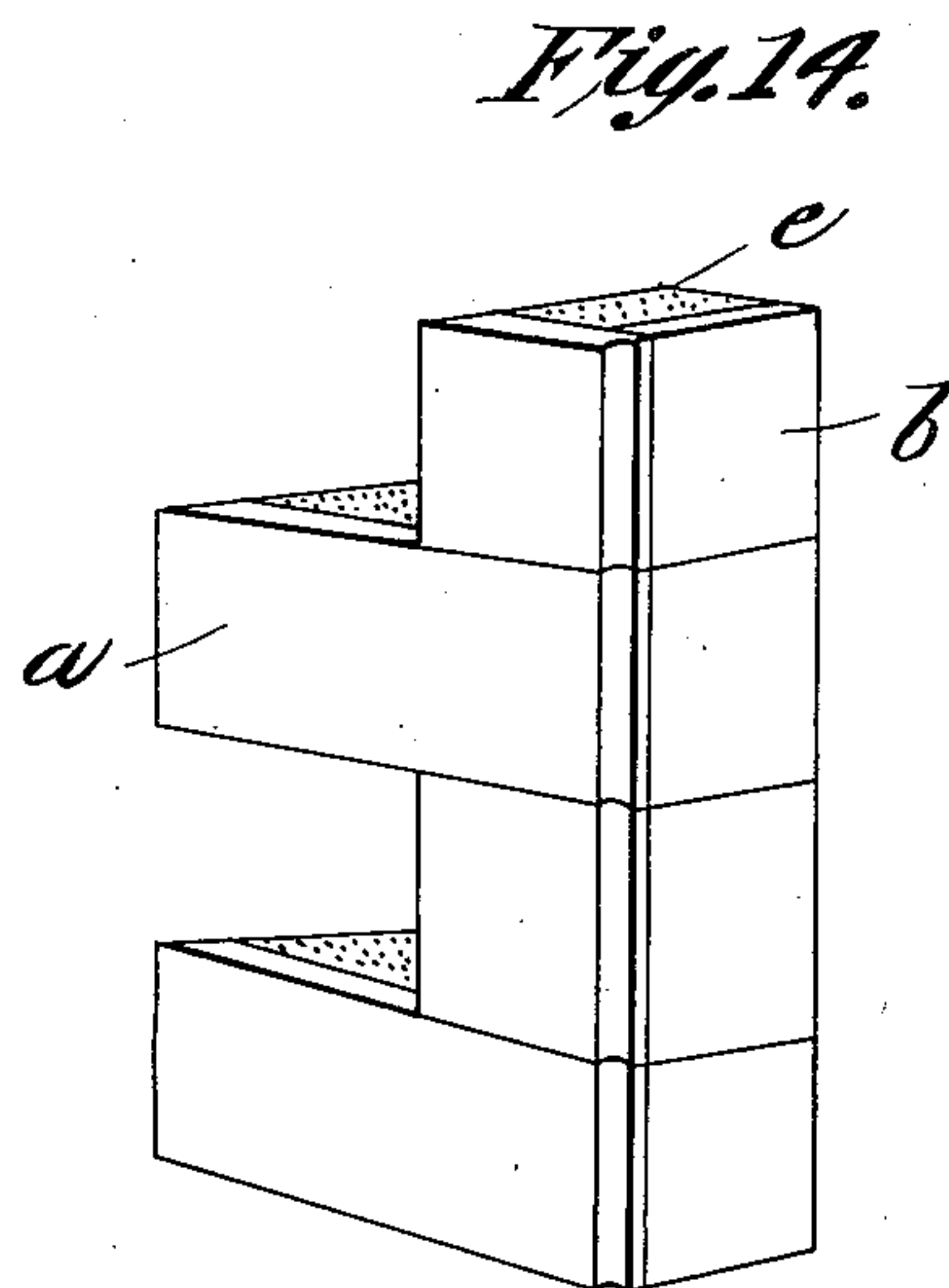
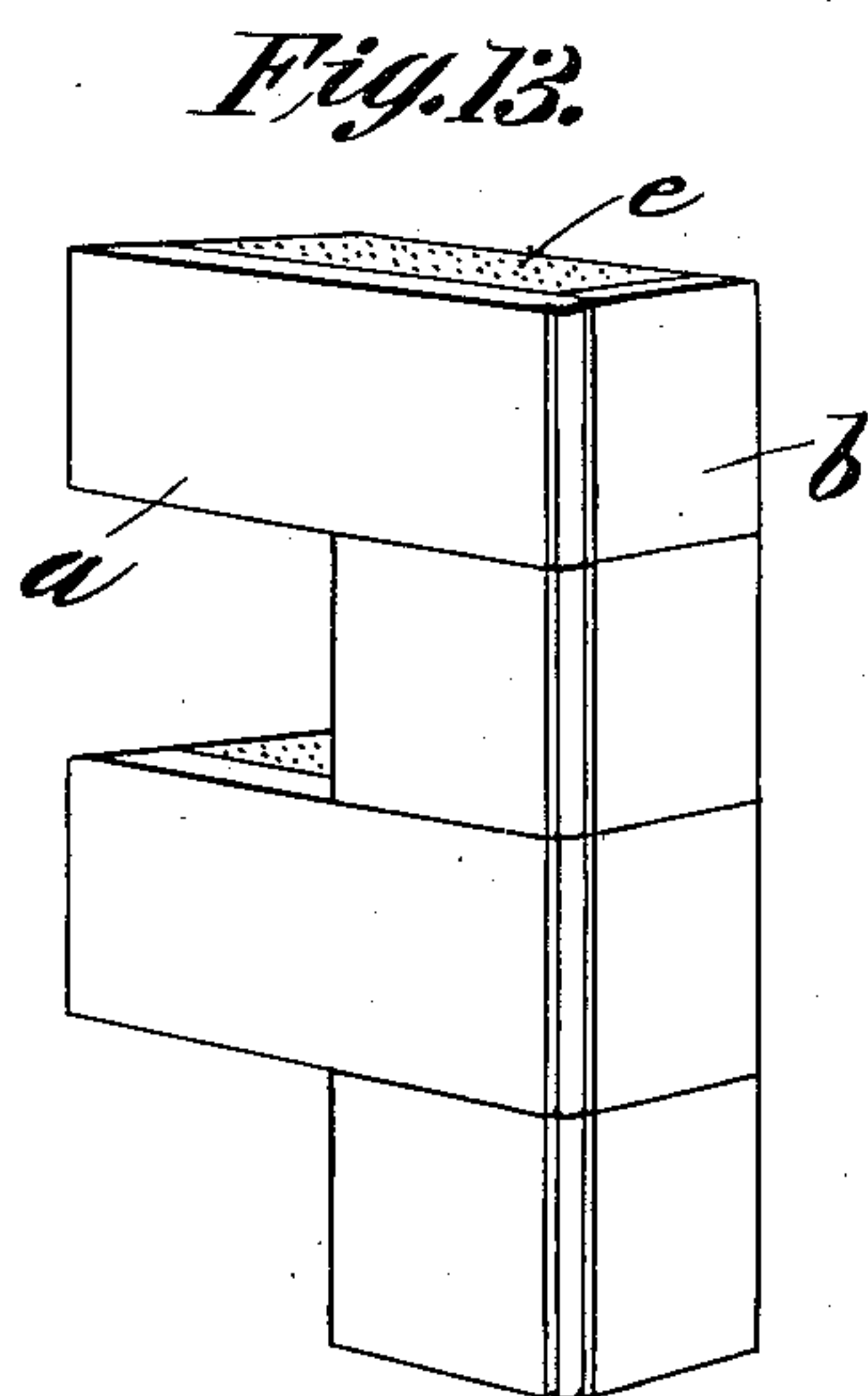
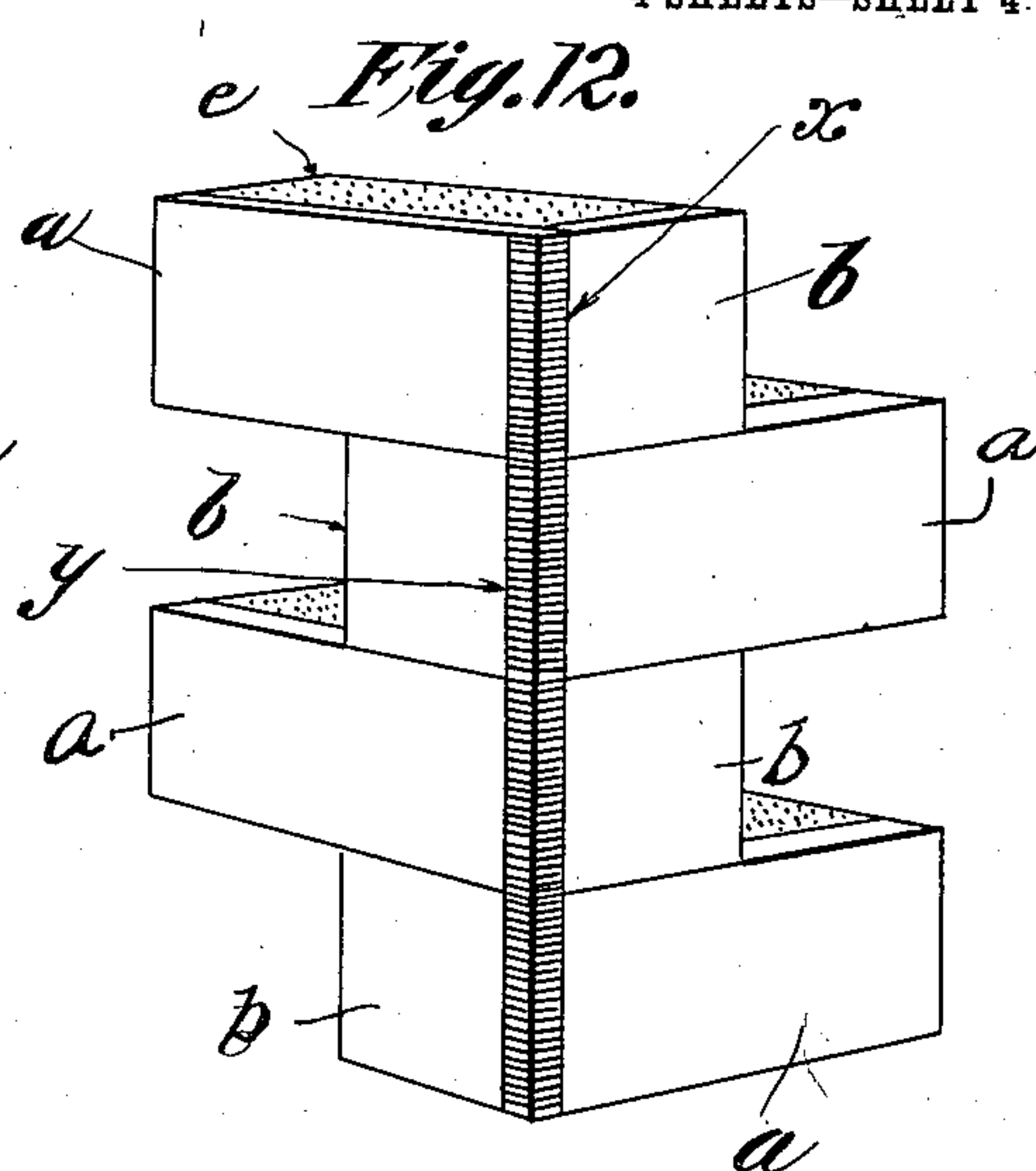
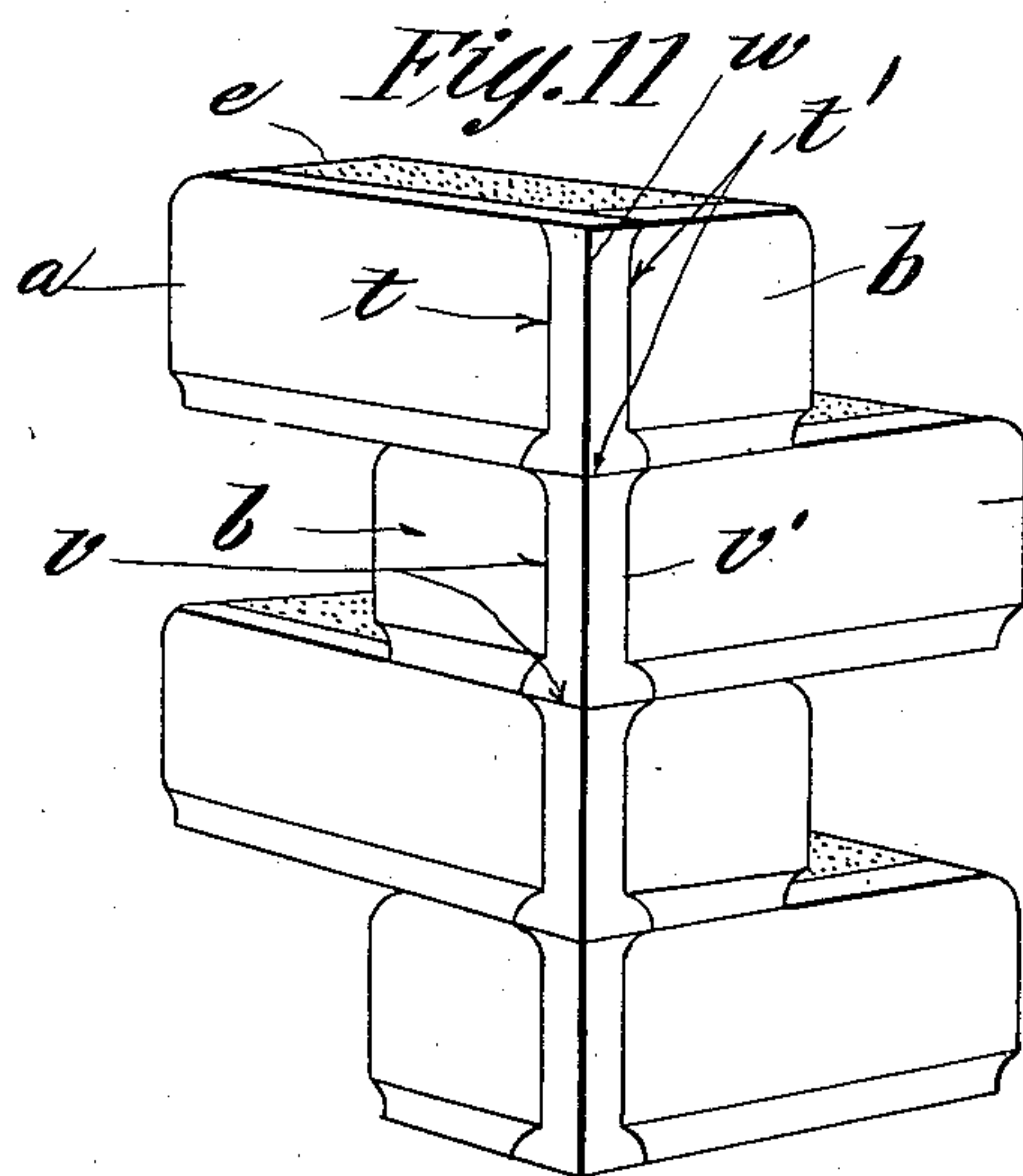
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

JAMES MUIR, OF SPRINGFIELD, MASSACHUSETTS.

## COMPOSITE BUILDING-BLOCK.

No. 856,176.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed December 5, 1904. Serial No. 235,613.

*To all whom it may concern:*

Be it known that I, JAMES MUIR, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Composite Building-Blocks, of which the following is a specification.

This invention relates to the manufacture of composite building blocks.

The object of the present invention is to provide a construction which permits a far greater range of adaptability and use than any of the constructions disclosed in the prior art, so far as I am aware, and the construction forming the subject matter of this application is rendered feasible commercially only by reason of the perfection of stone dressing machines whereby practically all of the work heretofore done by hand on blocks of building material used in stone construction may now be mechanically performed on relatively thin slabs of stone.

This invention therefore resides particularly in the construction of a building block having one or more of its faces provided with a veneered surface, the veneering material being anchored in a mass of concrete which constitutes the body of the block, the veneer constituting one or more of the sides of the mold in which the body of the block is formed.

A further object of this invention is to provide a composite building block having one side thereof faced with stone or similar veneering material, and the opposite side faced with some finishing material constituting a part of the plastic mass of which the body of the block is made, whereby when a wall is laid up both sides will present finished surfaces. In this manner it is possible to construct blocks of large size made to the exact form required by the plans of a building, with great accuracy and at a great saving in cost; for example, it is possible to make the steps of a building having the sides constituting the tread and the riser covered with a stone veneer, the body being of concrete or some similar material which may be easily molded to the required shape and to which the facings of stone or other suitable veneer material will be securely attached not only by the anchors embedded in said material and secured to the facings but by the adhesion of said material to the surface of the veneer in contact therewith, thereby producing prac-

tically a monolith at a small part of the cost of a solid block.

In a construction of a block of this character, the slabs of stone constituting the riser and tread portions of a step may be sawed out of a block of stone and dressed by machinery and put together in such a way as to make it indistinguishable from a solid stone block. This is cited merely as a simple illustration of a block made according to this invention.

Many other forms of building blocks showing the wide range of adaptability of the invention will be described farther on and are illustrated in the accompanying drawings, in which,—

Figure 1 is a perspective view of a composite building block embodying this invention, a portion of the block being broken away to more clearly show the construction. Fig. 2 is a somewhat enlarged sectional view taken transversely through a block showing an anchor to secure a stone facing to the block. Fig. 3 illustrates, in perspective, a step showing a block having two veneered surfaces, the anchors being shown in dotted lines. Fig. 4 is a perspective view of a hollow block showing a veneered surface of stone on the one side and a finish coat of some plastic material applied to the opposite side of the block. Fig. 5 is a perspective view showing a block constituting a part of a cornice illustrating the adaptability of this mode of construction to blocks to which the stone face has been applied to three surfaces thereof. Fig. 6 is a perspective view of a block construction showing a window-sill. Fig. 7 is a similar view showing the construction of a water-table. Fig. 8 is a perspective view of a portion of a cornice construction showing the adaptation of the construction to the production of ornamental effects, the parts constituting the stone facings of the blocks being of such shape as to permit of the elimination of handwork in the production of these ornamented surfaces. Fig. 9 is a perspective view of one of the facings of the block shown in Fig. 8, and Fig. 10 is a similar view of the same block, these two blocks illustrating different steps in the machining process whereby the ornamental effect is produced. Figs. 11, 12, 13, and 14 show different corner constructions whereby the meeting lines of the stone facing may be hidden.

In constructing the monolithic blocks forming the subject of this invention, the fac-



ing slabs are first sawed out and dressed by machinery, the same being completely finished before being applied to the block; these facings in the various drawings may be plain flat slabs, such as are indicated by *a* and *b* having holes drilled into the inner face thereof into which the ends of anchor-bolts *c* are inserted and retained by a setting of lead, sulfur, or similar material, the ends of the anchor-bolts being provided with cross-heads *d* in the usual manner.

In making a block, such as is shown in Figs. 1, 3, or 4 for example, the stone facing slabs *a* and *b* would be set up in their proper relative position, and then the body portion *e* of the block would be formed by molding a suitable plastic material, such as concrete, onto these facings in a suitable mold in which the mass would be permitted to harden before being removed. In this manner, blocks may be formed of any desired size or shape, the anchor-bolts being so distributed as to hold the facings securely in position and, incidentally, to strengthen the block, the plastic material constituting the body portion *e* being of such a nature as to adhere to the inner surfaces of the slabs, the whole, when dry, constituting practically a monolithic block having the strength of natural stone. This construction shows one of the simpler forms of block which may be made. In making there blocks, it is obvious that where the nature thereof will permit they may be cored out, as at *f* Fig. 4, in which case the anchors would preferably extend through the solid portions of the block, as shown in said figure in dotted lines.

Referring to Figs. 8, 9, and 10, a construction is shown therein which represents a portion of a cornice, for example, which shows a block with the facings of the two sides thereof so disposed as to permit the dentilated portions *g* and the moldings *h* of one facing to be cut entirely by machinery before the two are placed together in the mold, and the body portion *e* molded thereon. Fig. 9 shows one facing in which the molding *h* is first cut leaving the upstanding edge from which the dentils *g* are formed, these being afterward cut out by means of a suitable tool, the finished facing being as shown in Fig. 10. This facing may then be set up in a mold and the cap *j* located at right angles thereto to overhang the dentilated portion to produce the ornamental effect shown in Fig. 8, the anchors *c* being attached to the facings. The body *e* of the block is then molded thereon, as described.

In Fig. 5 is shown a block constituting a part of a cornice construction which is still more intricate and which shows the adaptability of the invention to another form of ornamentation. In this instance three of the surfaces of a block are provided with the facing of finishing material. The construc-

tion shown in this figure and that shown in Fig. 8 brings out most forcibly the very great economy in the use of this invention. In Fig. 5 it will be noted that the underside of the cornice which overhangs the wall and the outer edge and the upper side are all provided with facings, the outer edge being provided with a molding *k* and the under side being channeled as at *m*. It will be noted in this construction, as well as in Figs. 6, 7, and 8 that the meeting lines between two angularly located facings may be so disposed that this line will be practically invisible; but, furthermore, the facings may be so disposed as to protect this meeting line against the entrance of water therein, thereby protecting the construction against the disintegrating action of frost or the discoloring effect of moisture. It will be observed, however, by an examination of Fig. 5 that the effect produced is achieved by the assemblage of pieces of facing each of which may be prepared and finished in a machine, and yet when these are put together and the block is completed by molding thereon the body portion *e* of concrete, the meeting lines, as for example, the line *o* between the piece *k* and the cap *p* and the lines *q* between the inner edge or rear side of the molding piece *k*, and the facing piece *r*, and between the latter and the finishing strip *s* are not only completely hidden by being located in some angle of the ornamental design but are also so located as to be protected from the intrusion of water. It has been found in practice that these blocks may be molded with as great accuracy as blocks of stone can be cut, and when they are put together in a building it is impossible to distinguish between the faced blocks and the solid without a very close examination by one skilled in such matters. It is well known that concrete, such as constitutes the body portion *e* of these blocks, may be made as enduring as stone, and were it not for the fact that it is impossible to imitate stone surface with this material, all of the various pieces shown in the drawings of this application might be molded from concrete doing away with the stone facing, except for the further fact that the surface of concrete blocks exposed to the atmosphere will, after a certain length of exposure, show surface cracks and checks which render it an unsuitable material for fine buildings, aside from its lack of artistic finish.

Referring to Figs. 11 to 14 inclusive, various ways are shown in which the construction of these composite blocks may be treated whereby the meeting lines between two abutting edges will not disclose the fact that the blocks are veneered. In order to accomplish this, it is only necessary to provide some ornamentation for the corner in some line of which the meeting line of the facings may be hidden to completely disguise from



even a close observer the fact that the blocks are provided with veneered surfaces only. As shown in Fig. 11 for example, the meeting lines between the facings *a* and *b* would be along the line *t*, and the meeting line between the facings *a* and *b* in the next course of blocks below it would be along the line *v*, and so on. Each of the meeting lines *t* and *v* therefore would have its counterpart in the lines *t*<sup>1</sup> and *v*<sup>1</sup>, both lines, together with the corner line *w* producing an ornamental effect in which the meeting lines between the edges of the facings would be completely obscured. In Fig. 12, the same result is produced by tooling the corner thus obscuring the location of the meeting between the facings *a* and *b*, which meeting line, however, as in Fig. 11 for the first course, would be along the line *x* and on the next course along the line *y*, and so on, alternating from one side of the corner to the other. In Fig. 13 a corner beading is shown whereby the same effect may be produced, and in Fig. 14 still another variation of the design is shown in which one line thereof will serve to hide the meeting lines of the facings in the same manner. There is no part of the building, be it plain or ornamental, in which the invention may not be used to great advantage, save only in the erection of columns.

To more clearly illustrate the great economy which results in the use of this invention, it may be stated that a block of stone having a thickness of twelve inches may be sawed up to make eight or nine slabs of facing, and when an expensive stone, such as marble, is

used, it may be readily figured out how expensive it is to pay for a solid block of such a material which is inclosed, save for its face, in a wall where it is completely hidden from view instead of being utilized in the way of facings and the body portion thereof be made of some equally strong but far cheaper material which may be molded easily into any desired shape.

I am aware that it is not broadly new to make a building block having a facing of veneer, such a block being shown in the patent to Derrom of February 6, 1872 No. 123,385. I am also aware that such facings have been applied to wooden walls as shown in the patent to Brower of June 27, 1899 No. 627,960, and I am aware that slabs of stone may be anchored to walls to constitute a facing.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is:—

A building block comprising a facing of stone or the like for one or more sides thereof, a body of concrete molded onto the back side of said facing and adherent thereto, said concrete body comprising a layer of finishing or surfacing plastic forming a part thereof, located on one or more of the sides of the block opposite the stone facings, the whole constituting, in its completed state, a monolithic block.

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K. I. CLEMONS.