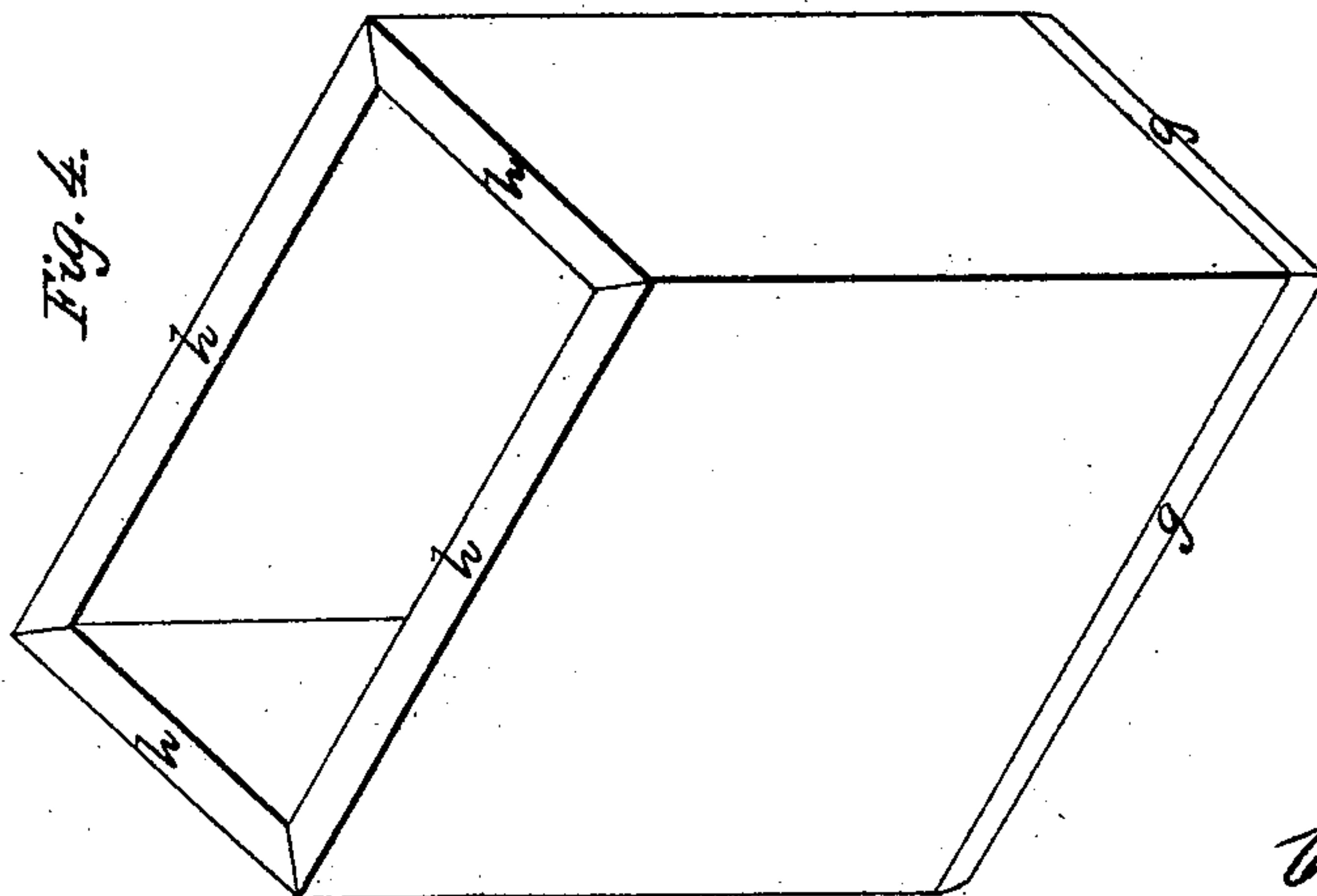
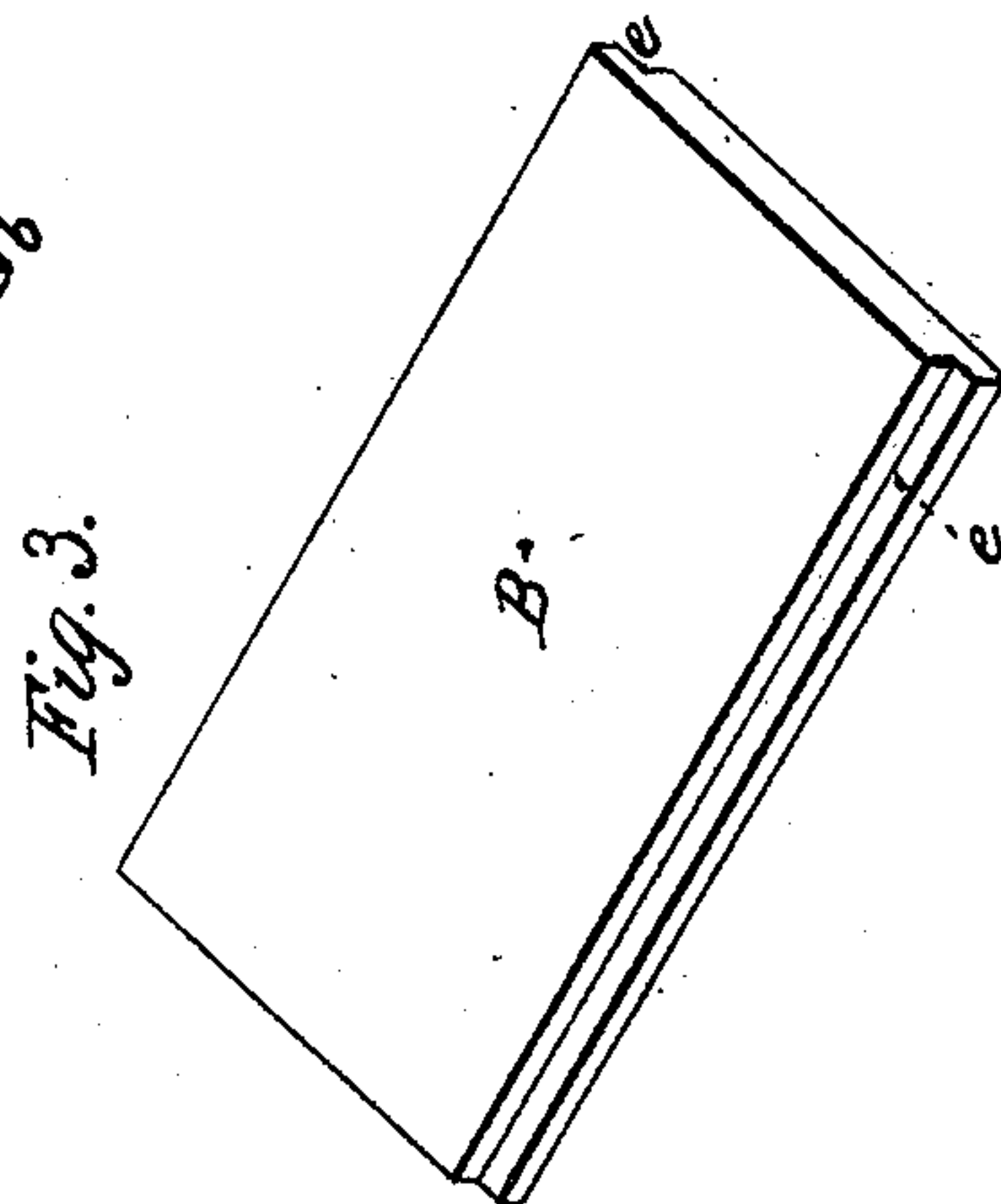
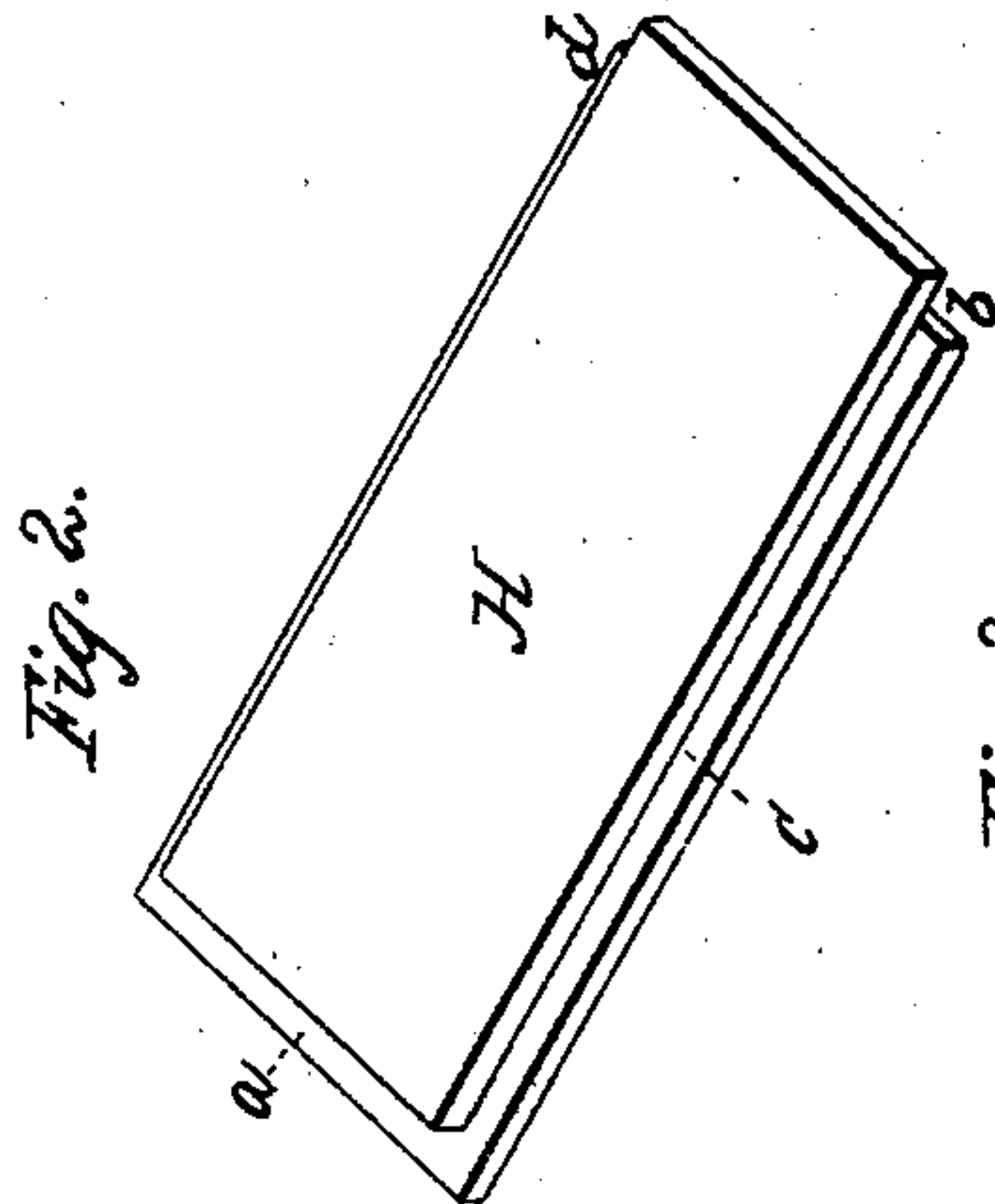
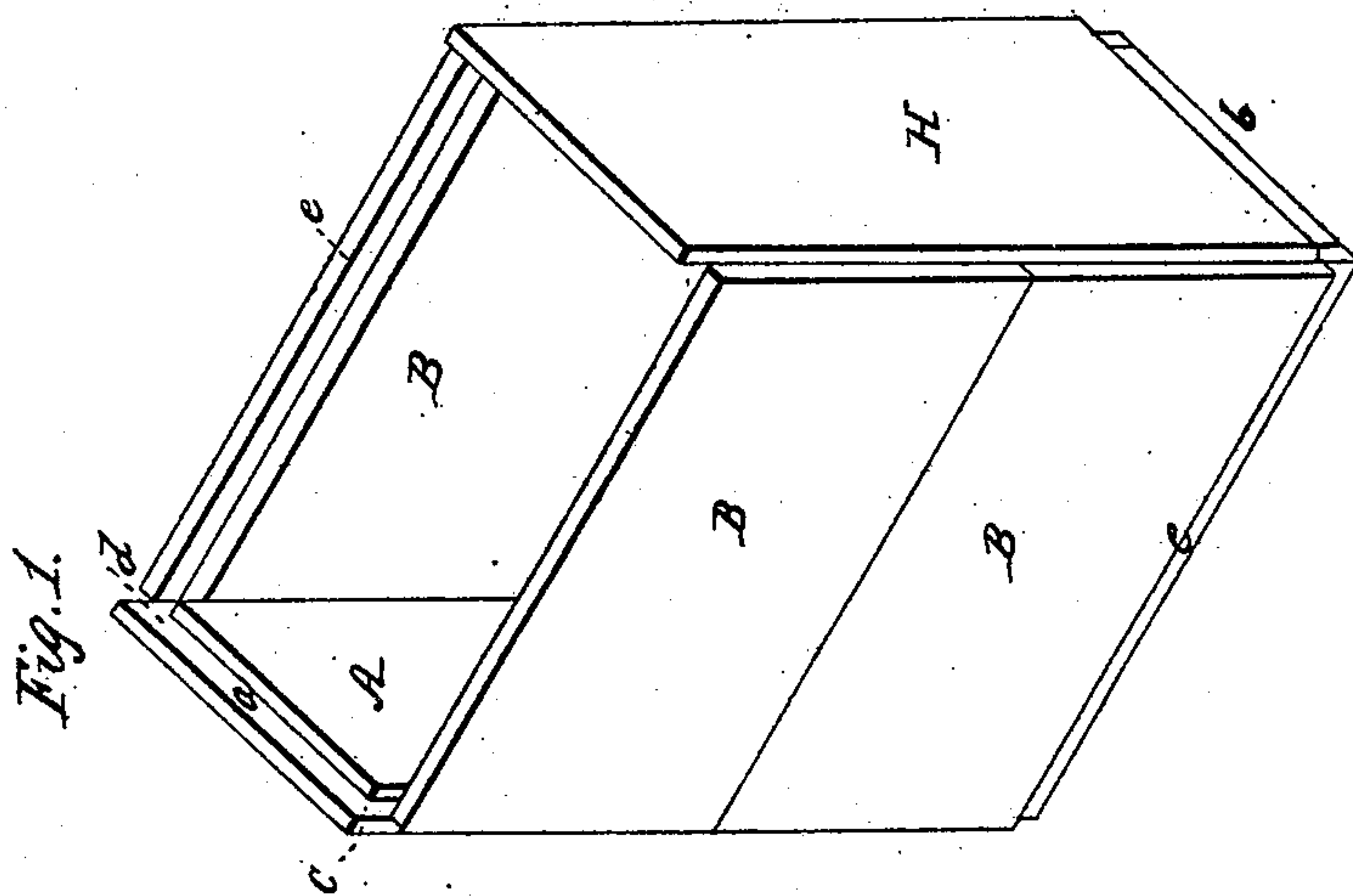


SHIVERS & USTICK.

Chimney Flue.

No. 33,498.

Patented Oct. 15, 1861.



Witnesses:

*H. Wilson*  
*Jas. McCreary Jr.*

Inventors:

*Charles Shivers*  
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# UNITED STATES PATENT OFFICE.

CHARLES SHIVERS AND STEPHEN USTICK, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN LININGS FOR CHIMNEYS.

Specification forming part of Letters Patent No. 33,498, dated October 15, 1861.

*To all whom it may concern:*

Be it known that we, CHARLES SHIVERS and STEPHEN USTICK, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Chimney-Flues; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, which make a part of this specification, in which—

Figure 1 is a perspective view of a section of the lining of the flue. Fig. 2 is a view of the ends A of Fig. 1. Fig. 3 is a view of one of the side pieces B of the same. Fig. 4 is a modification of the flue-lining, the section being in but one piece.

The nature of our invention and improvement consists in constructing clay linings for forming the inside of chimney-flues, either in closed sections or in plates, as we will presently describe.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A A of Fig. 1 are pieces of a section of the lining of the flue, which have rabbets *a b* at their ends and rabbets *c d* at their perpendicular edges, which are shown in detail in Fig. 2.

B B B B are side pieces of the section having longitudinal rabbets *e e*, which may be more clearly seen in Fig. 3.

The construction of the flue, which progresses simultaneously with the building of the chimney, is as follows: The end plates A A and bottom side plates B B are set together, the ends or transverse edges of the side plates B being placed in the rabbets *c d* of the end plates A, and when the walls of the chimney are built around them other plates B are set on the former, the rabbets of the upper ones fitting the rabbets of the lower ones, and so on in succession as the construction of the chimney progresses, the upper rabbet *e* being placed at the inside of the flue to turn all the water inward which may happen to run down the chimney. In like manner the end plates A are set one upon another in succession, the under rabbet *b* of the second fitting to the upper rabbet *a* of the first, and in like manner throughout the building of the flue.

Fig. 4 shows a modification of the construction of the pieces to form the flue-lining. Instead of making it in plates, as represented in Fig. 1, we form the lining in sections, making the lower edges *g* convex and the upper edges *h* concave, or vice versa, so that one shall fit the other. We make the pieces tapering for contracting the flue from any desired point, and for making offsets we form the edges of the plates or sections to correspond with the direction required of the flue. We glaze the inside of the pieces for forming the flue-lining and burn them similar to tiles. By so doing we obtain an increased draft to the flue and prevent the soot sticking to it, and also counteract the influence of acids, which are so destructive to chimneys as usually constructed, especially in loosening the mortar. We use cement for the joints, or else a small quantity of mortar, there being but little required in forming the flue on our plan.

We do not confine ourselves to the particular plans above represented for connecting the pieces of the lining of the flue, as various modifications may be made to accomplish the same result. We also make it of any required form to adapt it to dwellings, public buildings, stacks for steam-engines, or any other chimney for the creation of a draft and the transmission of smoke.

Having thus fully described the construction and operation of our improvement in chimney-flues, what we claim therein as new, and desire to secure by Letters Patent, is—

Forming the end tiles A and side tiles B with rabbets, substantially as described, and making the said end tiles of different perpendicular dimension to that of the side tiles, so as to break joints in the construction of the flues when they are arranged in relation to each other, substantially in the manner and for the purposes set forth.

In testimony that the above is our invention we have hereunto affixed our hands and seals.

CHARLES SHIVERS. [L. S.]  
STEPHEN USTICK. [L. S.]

Witnesses:

F. WILSON,  
JAS. MECRAY, Jr.