

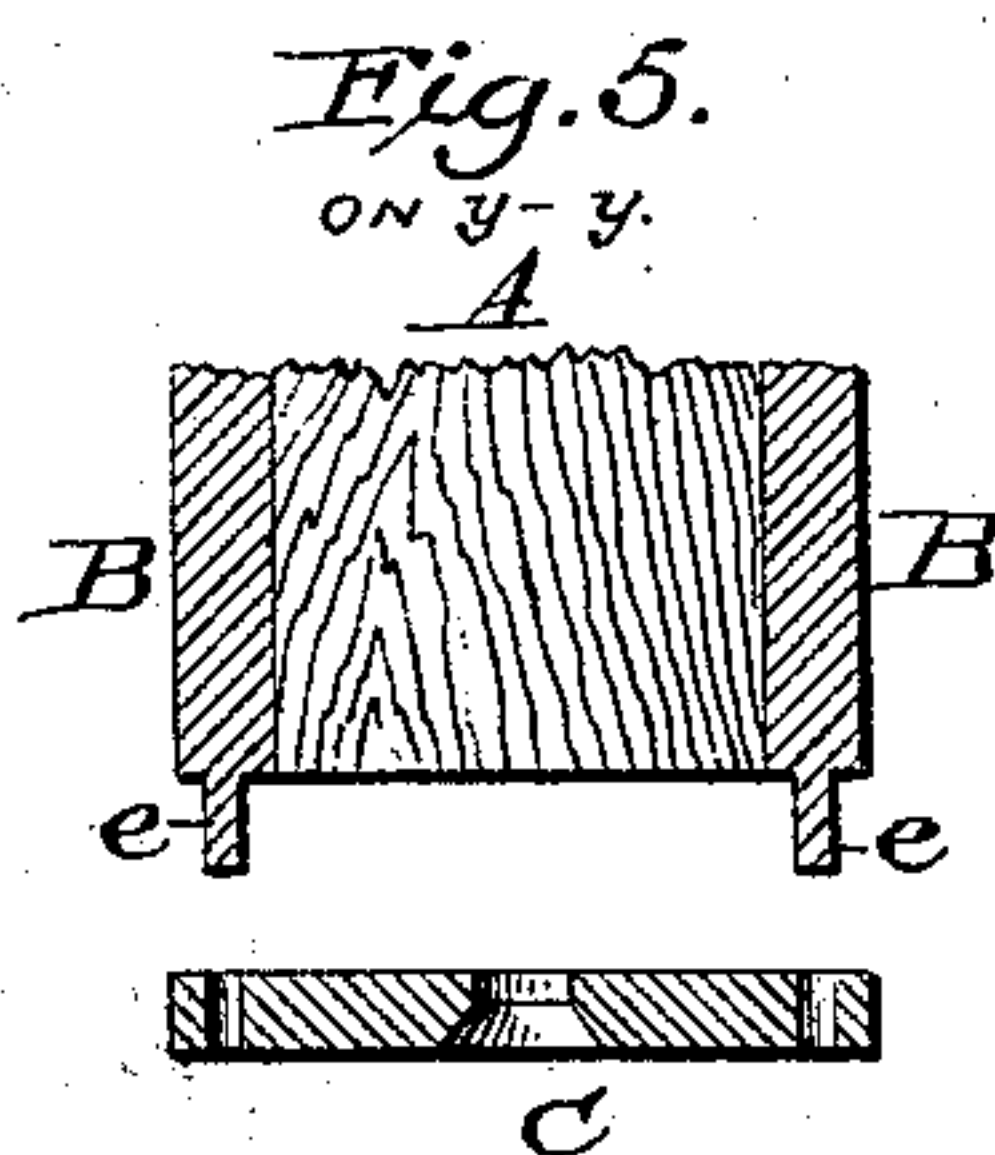
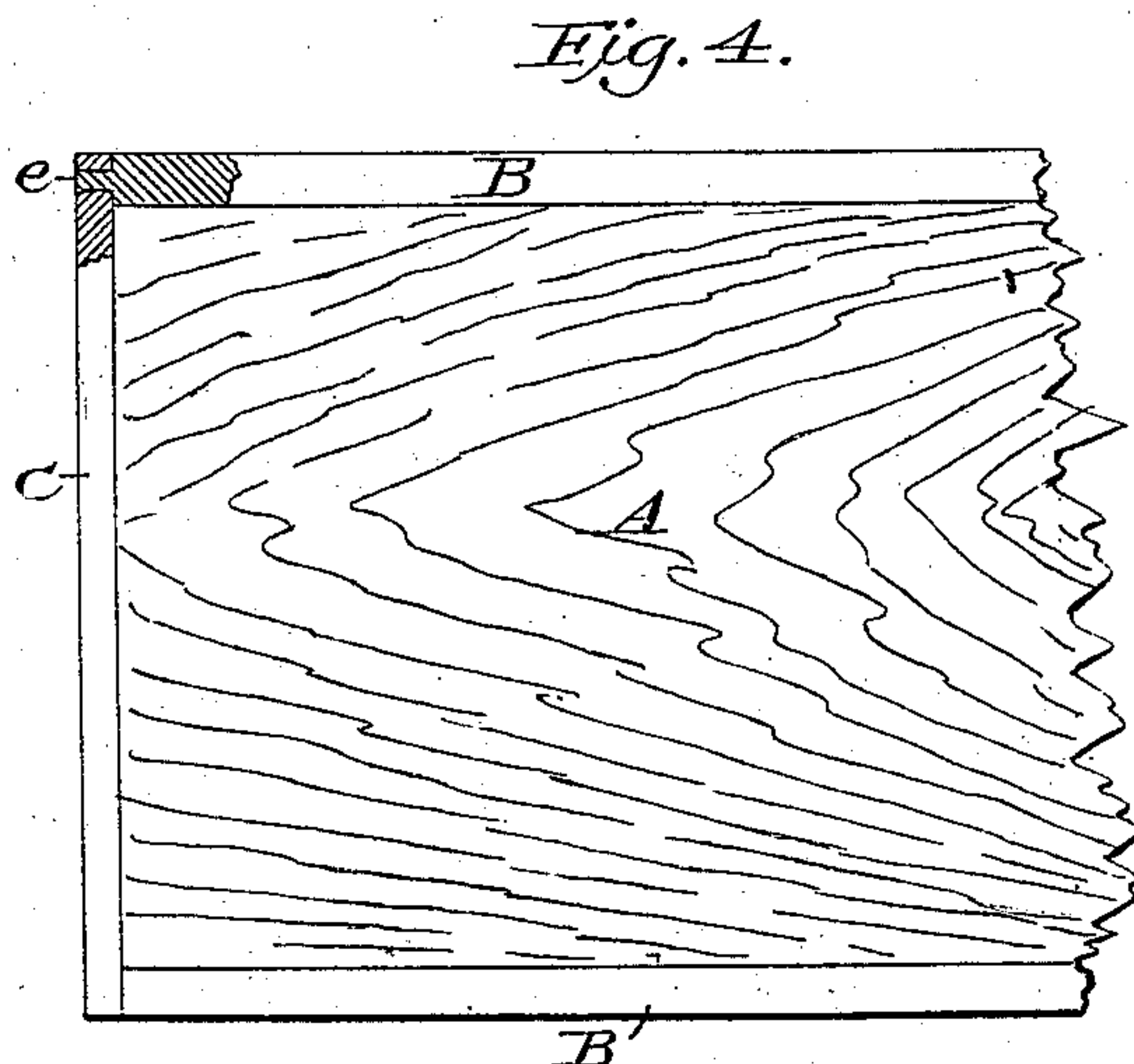
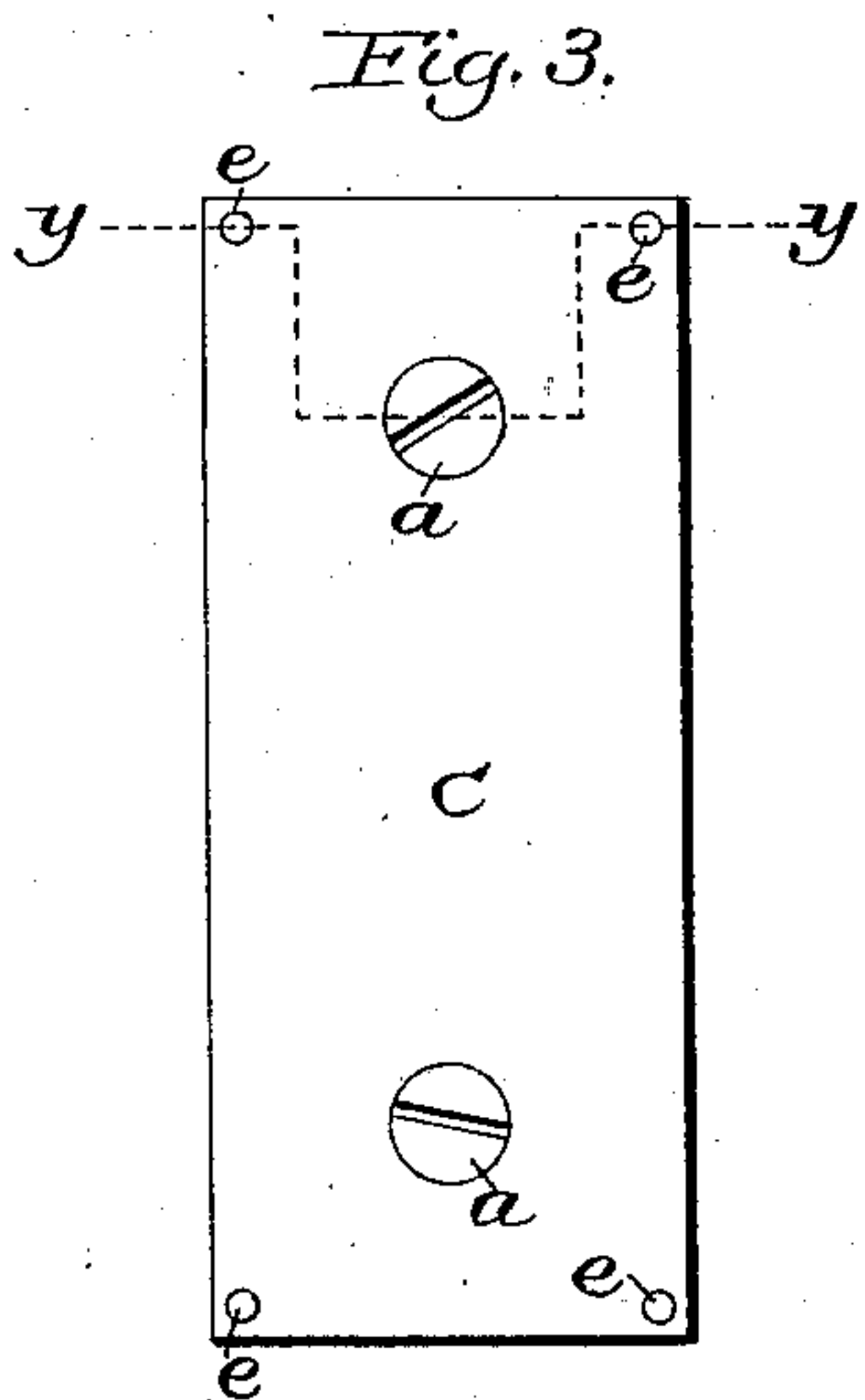
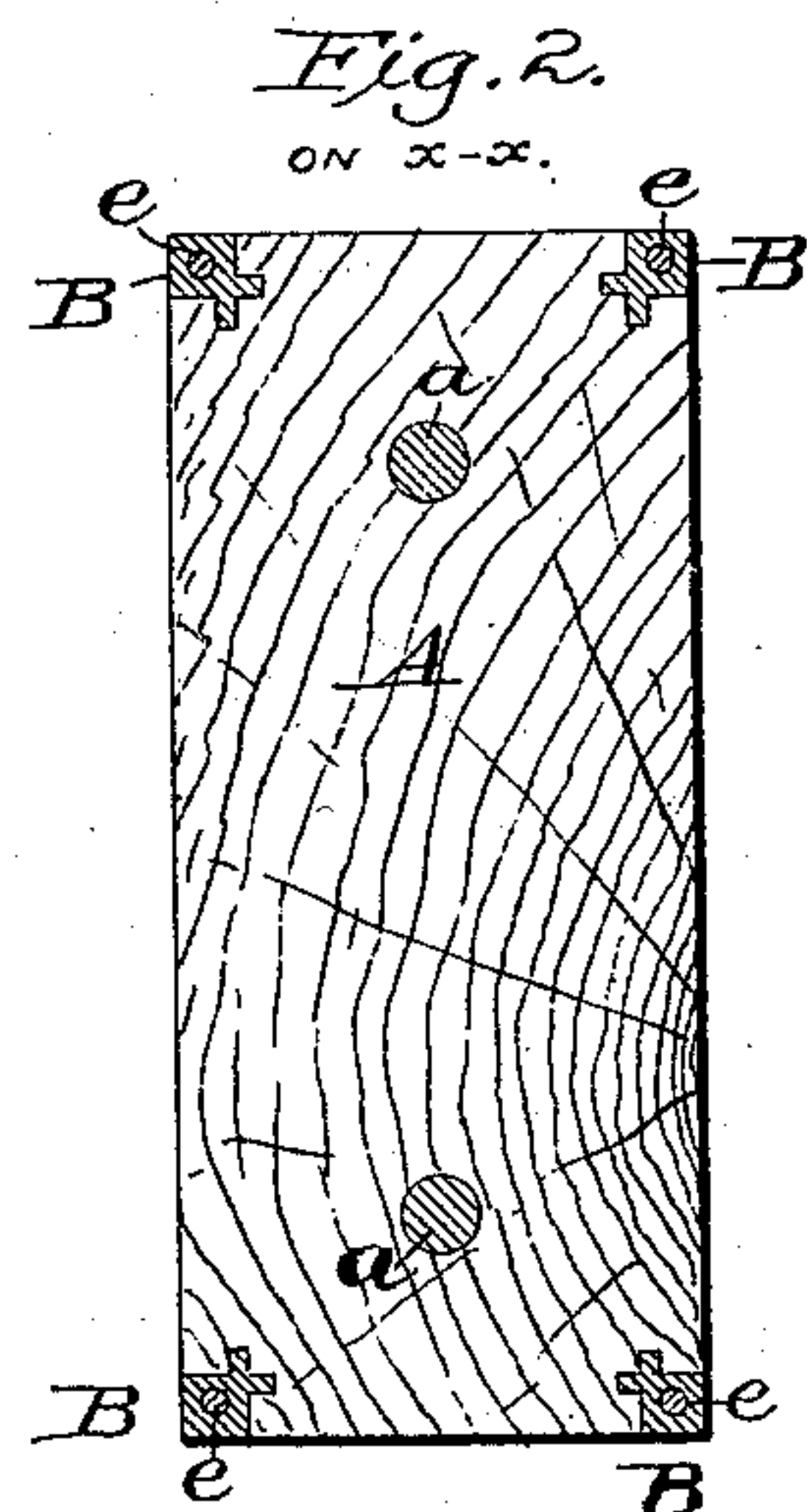
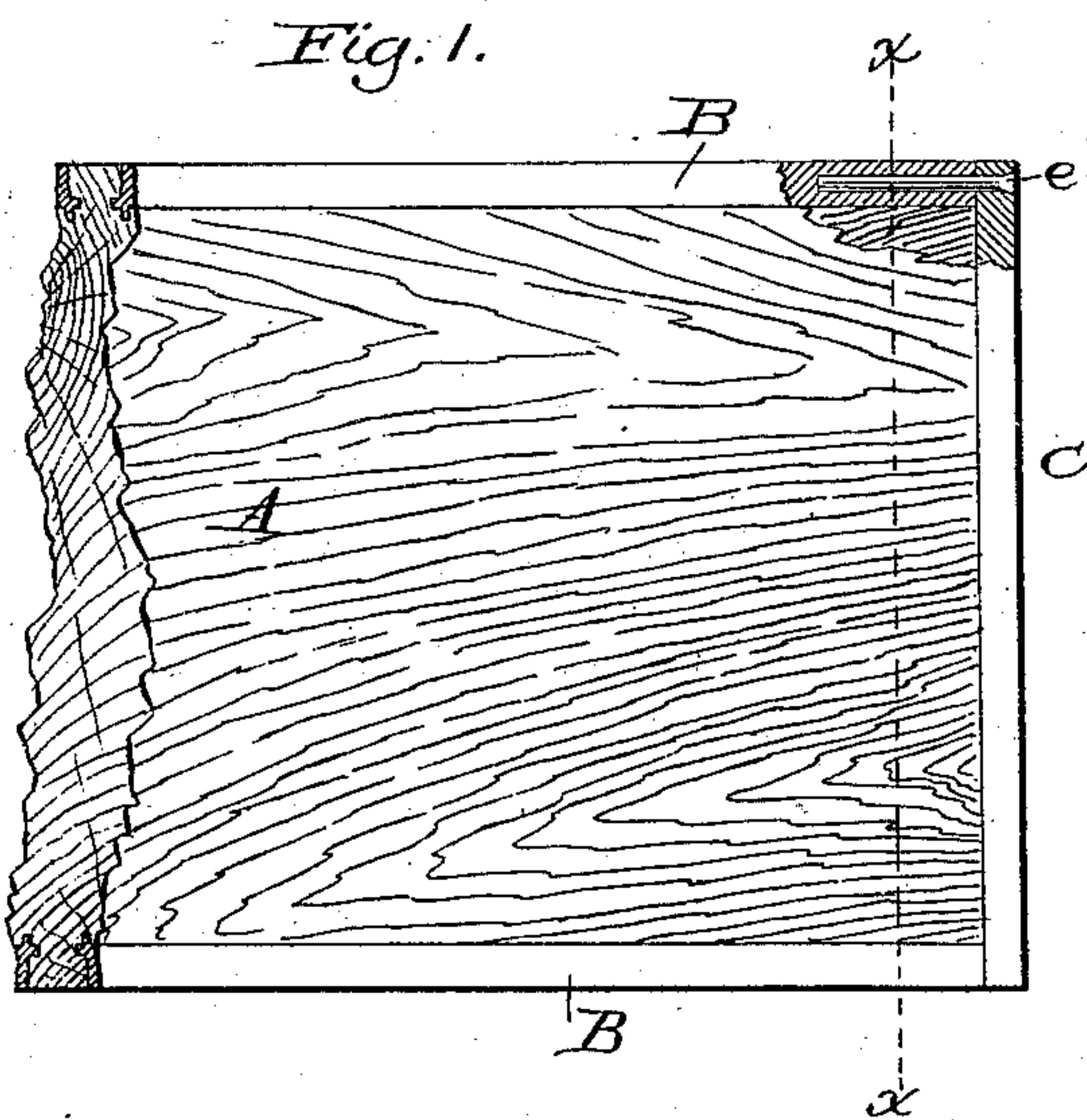
(No Model.)

E. A. & C. M. STRATTON.

SPIRIT LEVEL STOCK.

No. 370,826.

Patented Oct. 4, 1887.



Witnesses:

James D. Sutherland
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UNITED STATES PATENT OFFICE.

EDWIN A. STRATTON AND CHARLES M. STRATTON, OF GREENFIELD,
MASSACHUSETTS.

SPIRIT-LEVEL STOCK.

SPECIFICATION forming part of Letters Patent No. 370,826, dated October 4, 1887.

Application filed April 2, 1887. Serial No. 233,389. (No model)

To all whom it may concern:

Be it known that we, EDWIN A. STRATTON and CHARLES M. STRATTON, both of Greenfield, in the county of Franklin and State of Massachusetts, have jointly invented certain new and useful Improvements in Spirit-Levels, of which the following is a specification.

Our present invention relates to spirit-levels; and the invention consists in the connection of the metallic corner-strips with the end plates of the wood stock of the level, as hereinafter more fully described.

Figures 1 and 4 are side elevations of a portion of a level, with a portion shown in section. Fig. 2 is a transverse section on the line xx of Fig. 1. Fig. 3 is an end view, and Fig. 5 is a longitudinal sectional view on the line yy of Fig. 3.

Our present invention is an improvement on the device or improvement in spirit-levels for which a patent was granted to us March 1, 1870, No. 100,463. In that the protecting corner-strips B of metal were secured to the wooden stock or body A by means of two flanges standing at right angles to each other and fitting in grooves formed for them in the stock A, as shown in Fig. 2, the end plates, C, being secured to the wood alone by means of a couple of screws, a , as shown in Fig. 3, and not being in any manner connected to the corner-strips B. While that mode of construction was a decided improvement on the plans previously in use, experience has shown that it is subject to certain defects. It sometimes happens that these spirit-levels have to be used in the construction of masonry where there is much moisture—as in the building of piers, in damp basements, and the like—in which cases the wooden stock A absorbs moisture, causing it to swell, and as the moisture enters the pores of the wood at the ends of the stock more readily than through the sides the result is, that it expands and contracts at the ends more than elsewhere, thereby causing more or less inaccuracy or unevenness of the surface of the stock in a line from end to end, and which of course it is desirable to prevent or avoid as far as is possible. It also sometimes happens, in consequence of the swelling and shrinking of the wood, accompanied by rough or careless hand-

ling of the level, that the corner-strips B become loose in their seats at or near the ends of the stock, the wood occasionally cracking or splitting at the corners, so that the corner-strips B become loose at their ends, all of which tends to destroy the accuracy of the level. It is to remedy or prevent these objections that our present invention is designed. The manner of accomplishing this is by connecting the metallic corner-strips B to the metallic end plates, C, in such a manner as to unite them rigidly, so that the corner-strips B shall be held securely in place at their ends and always occupy the same position in relation to the end plates. This may be done in various ways; but the simplest plan is to drill holes in the ends of the corner-strips B and corresponding holes in the end plates, C, at each corner, and then insert a screw or pin, e , as shown in Figs. 1, 2, and 3. If a pin be used instead of a screw, the hole in the corner-strips should be of sufficient depth to give the pin a good hold, and the pin should be driven in tight with all the force that the pin will bear. In all cases the holes in the plates C will be slightly enlarged or beveled at the outside, as shown in Figs. 1 and 4, to form a seat for the head of the screws, if they be used, or for the ends of the pins to be riveted down in, in case pins be used, so as to hold the plates C close against the ends of the strips B, and also against the ends of the wooden stock A, screws a being also used, as shown in Fig. 3, to hold the end plates in as close as possible, the object being to prevent, as far as possible, the entrance of moisture between the plates C and the ends of the stock A.

It is obvious that instead of using screws or pins, as represented in Fig. 1, the pins e may be formed integral with the strips B by simply making the strips a little longer and then turning them down, so as to leave projecting from each end a pin or rounded portion, e , of the proper length to project through the holes in the plates C and be headed down therein, the pins thus formed being shown in Fig. 5, with the plate C ready to be applied.

It is also obvious that the pins e may be made of wire of the proper size and be inserted in holes in the ends of the strips B and be soldered therein before the end plates are put on,

which would be essentially the same as forming the pins integral with the strips, as in Fig. 5. In practice, however, we find that the plan shown in Fig. 1 is the simplest and cheapest, and that if care be taken to force the pins *e* in tight, as above described, it answers the desired purpose.

As an additional means of preventing moisture from entering the pores of the wood at the ends, we also apply a coating of water-proof cement of any suitable kind to the ends of the stock *A* before securing the end plates, *C*, in position.

By these improvements it will be seen that we not only secure the corner-strips *B* more firmly in place at and near their ends, where they are most liable to become loose, but at the same time hold the end plates, *C*, more firmly in contact with the stock at its ends, especially at their corners, where the moisture is most liable to enter, and thereby render the instrument far less liable to being rendered inaccurate from the causes mentioned. Whatever slight variations may be caused in the stock by the shrinkage of the wood, if any, will

not affect the accuracy of the level, because the strips *B*, being firmly united to the plates *C* at each end, will retain their position, thus, with the end plates, affording points of bearing which will always remain relatively the same.

Having thus described our invention, what we claim is—

1. The combination of the wooden stock *A*, the metal corner-strips *B*, and the metal end plates, *C*, secured to the corner-strips *B*, substantially as shown and described.

2. The combination, in a spirit-level, of the wooden stock *A*, having its ends saturated or coated with a water-proof cement before applying the end plates thereto, the corner-strips *B*, and the end plates, *C*, secured to the corner-strips *B*, substantially as and for the purpose set forth.

In witness whereof we hereunto set our hands in the presence of two witnesses.

EDWIN A. STRATTON.

CHARLES M. STRATTON.

Witnesses:

S. CAROLINE ALLEN,

CHAS. ALLEN.