R. Wood.

Iron Structure.

No. 40,975. Patented Dec. 15, 1863.

Fig: 1

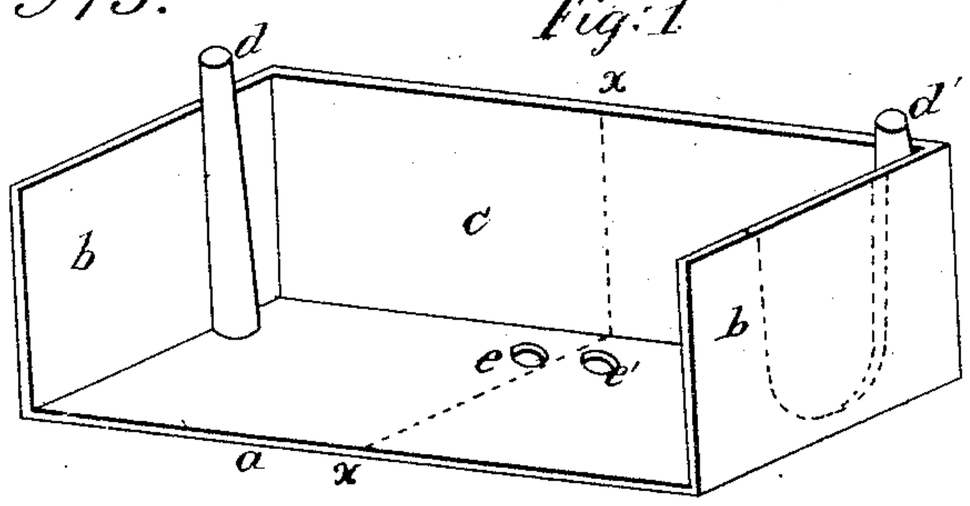


Fig: 2.

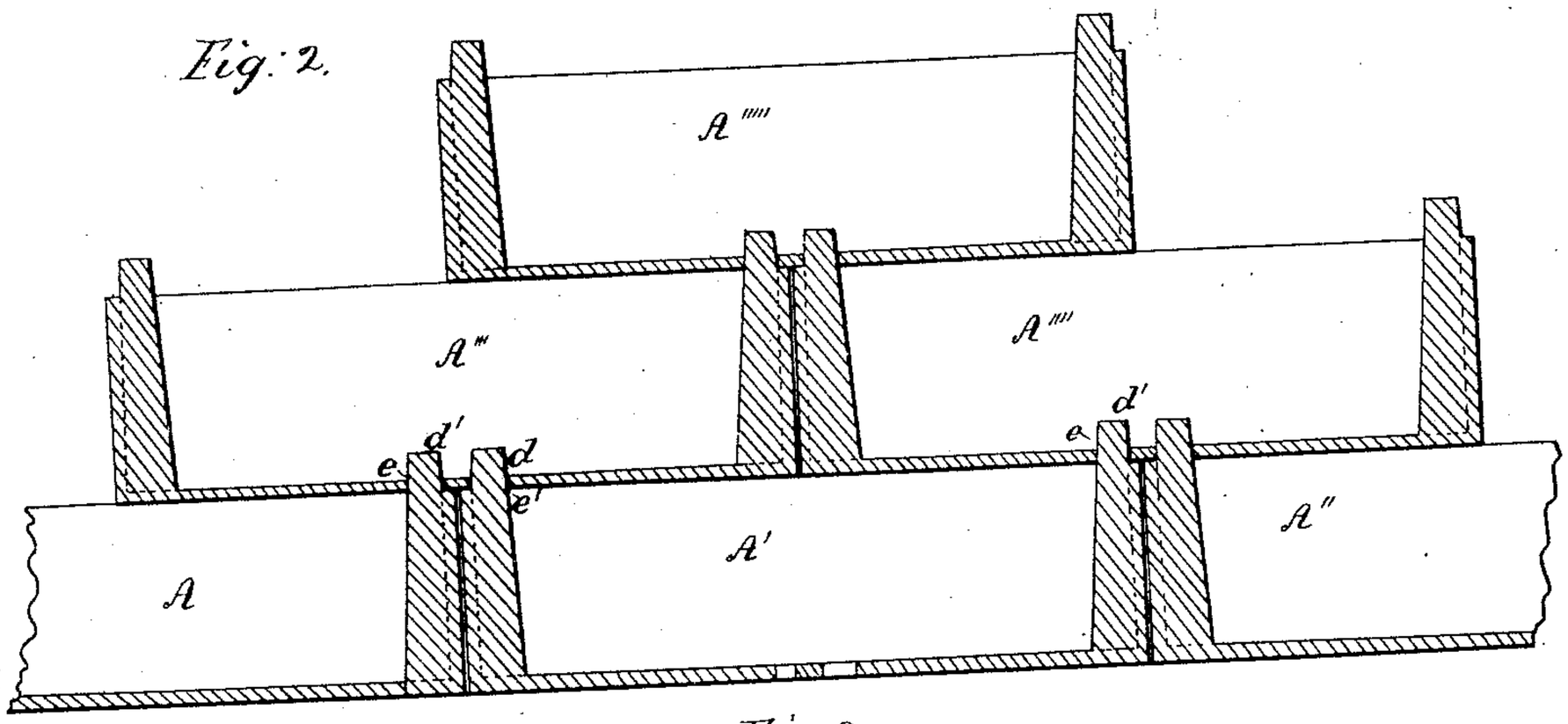


Fig: 3.

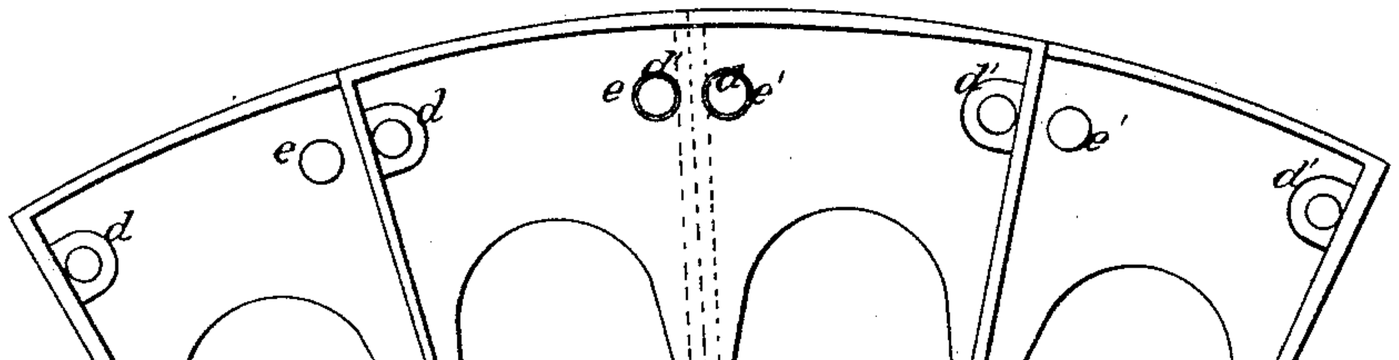
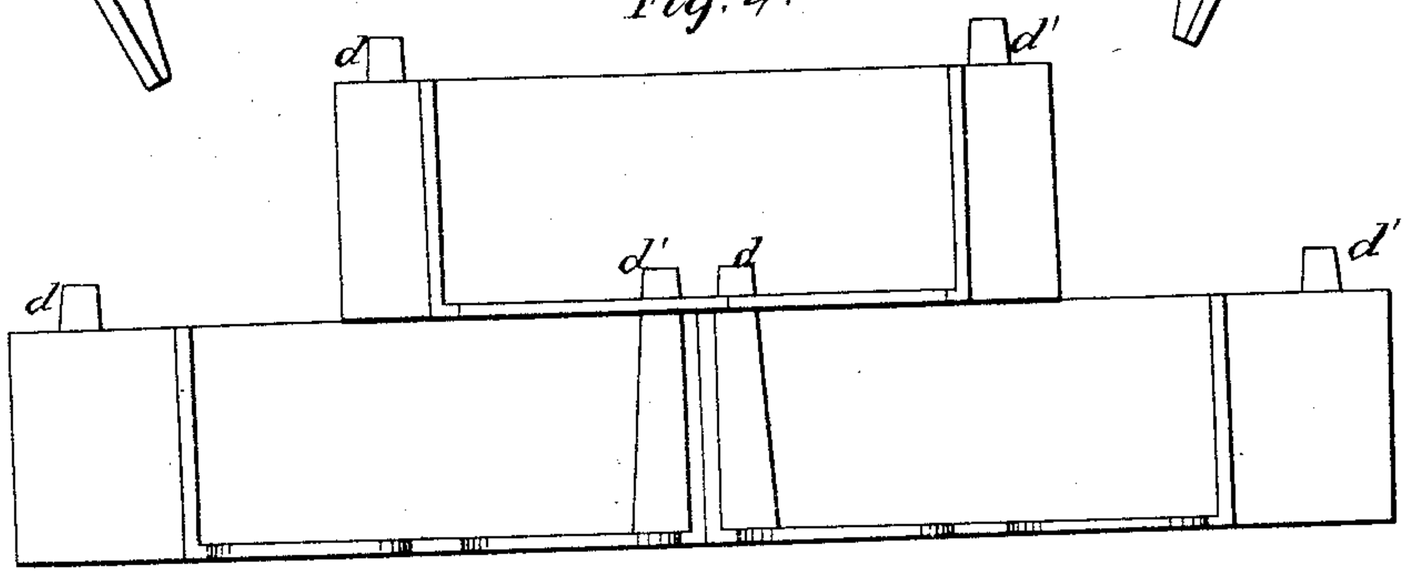


Fig: 4.



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UNITED STATES PATENT OFFICE.

ROBERT WOOD, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CAST-IRON BUILDING-PIECES.

Specification forming part of Letters Patent No. **40,975,** dated December 15, 1863.

To all whom it may concern:

Be it known that I, ROBERT WOOD, of Philadelphia, Pennsylvania, have invented certain Cast-Iron Building-Pieces; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My improved building-pieces consist of hollow shells of cast-iron, having projections and holes arranged substantially as described hereinafter, so that the pieces may be readily arranged in their proper relative position, and form a strong, light, and durable wall.

In order to enable others to make and apply my invention, I will now proceed to describe the manner of carrying it into effect.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of one of my improved cast-iron building-pieces as constructed for straight walls; Fig. 2, a vertical section of a portion of a wall composed of my improved building-pieces; Fig. 3, a plan view of the building-pieces arranged for a circular or curved wall; and Fig. 4, an elevation of Fig. 3, looking toward the interior of the wall.

My improved building-pieces, as seen in Figs. 1 and 2, consist of very light cast-iron shells, having the external form and dimensions of ordinary bricks, each building-piece having the base *a*, the opposite vertical flanges or ribs, *b* and *b'*, which form the ends of the piece, and the rib *c*, which forms the front or exposed side, the piece being open at the opposite side and top, as clearly shown in Fig. 1, so that the molding and casting of the pieces may be conducted without resorting to any elaborate manipulation, or to the use of expensive patterns and core-boxes. On the inside of each building-piece, and near the corner where the ribs *b* and *c* meet, is a pin, *d*, which projects above the edge of the ribs, a similar pin being similarly situated in respect to the opposite corner, where the ribs *b'* and *c* meet. In the bars *a* of the building-pieces are two holes, *e* and *e'*, each being of such a diameter as to freely admit one of the projecting pins, the two holes being situated at equal distances from a line, *x*, drawn midway between the opposite ends of the piece.

The manner in which these building-pieces are arranged in respect to each other will be best understood by reference to Fig. 2, which may be considered part of an unfinished wall, composed of the pieces A, A', A'', A''', A'''', and A'''''. The pieces composing the lower layer are first laid end to end on a suitable foundation, after which the second layer is placed on the first, the projecting pins of the lower pieces entering the holes *e* and *e'* of the pieces composing the upper layer. Thus the projecting pin *d'* of the piece A enters the hole *e* of the piece A''', while the pin *d* of the piece A' enters the adjacent hole of the same piece A''', which of necessity must maintain the two pieces A and A' in their proper contiguity to each other, and this arrangement is continued throughout the structure. The projecting pins are so situated in respect to the holes that when the pieces are properly fitted together the line of junction between two of the pieces of one layer must be midway between the opposite ends of one of the pieces of the layer above and that below. The pins and holes thus serve two purposes—namely, as guides—by means of which the pieces are arranged in their proper relative position without the necessity of any care or adjusting on the part of the builder, and as a means of locking the pieces intimately together, for it will be seen that one of the pieces cannot be disturbed without displacing the adjacent pieces above and below, each piece being maintained in its position laterally as well as longitudinally, and being prevented from any tendency to be twisted out of place by four pins—namely, by its two pins which enter the holes of the upper pieces and by the two pins of two lower pieces. It may be advisable in many instances to use a thin light cement at the points where the pieces rest upon and where they meet each other. After the wall has been built to the proper height it should be surmounted with a proper coping, in which are holes for receiving the pins of the upper layer of building-pieces. The wall, when completed, will present on its exterior face an uniform system of layers and joints, similar to those of a brick or stone wall, which it may be made to represent by painting. The inside of the wall will have a number of interstices, which may be filled up by coarse cement and finished with a coating of plaster, so as to present a uniform smooth surface. The ne-

cessity of filling up the interior of the pieces may be avoided by so forming each piece thta the top only will be open. Both sides of a wall equal in thickness to the width of one of the pieces will consequently present the same appearance.

Although my improved building-pieces may be used with advantage in the construction of dwelling houses and other structures, they are especially applicable to the erection of chimneys, which, when made of brick, become rapidly deteriorated by the action of the products of combustion and by exposure to the atmosphere. When thus employed, it will be rarely necessary to fill up the inside of the walls with cement. When used for the erec tion of chimneys which have to be subjected to a great heat, the inside of the pieces may be filled in with fire-clay or other refractory material.

It will be evident that my improved building-pieces may be made of any form and dimensions which the nature of the structure may require. For instance, they may be made of the form seen in Figs. 3 and 4, when a curved or circular wall is required, and in many cases the pieces may be made lighter by cutting away the patterns from which they are molded—for instance, the bases of the pieces may be of the form seen in Fig. 3, or the ends of the pieces may be made lighter by cutting away the portion represented by red lines, Fig. 1.

Structures of the most durable and permanent character may be made of my improved building-pieces, which are lighter than bricks or stones of similar dimensions. The structure, too, can be erected with rapidity and without that delay required in building walls of stone or brick, the pieces being, as it were, self-adjusting to their proper position.

The strength of a wall made of my improved building-pieces is, as I have found by practical tests, equal to that of a brick wall of double the thickness.

Without confining myself to any particular form or dimensions of the building-pieces, or to the number or shape of the projecting pins and holes, I claim as my invention, and desire to secure by Letters Patent—

Building-pieces consisting of hollow cast-iron shells, having projections and holes arranged substantially as and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT WOOD.

Witnesses:

JOHN WHITE,

CHARLES HOWSON.