

(No Model.)

3 Sheets—Sheet 1.

E. LAMAL & S. DUPRAT.

STAMPED ROOFING TILE.

No. 349,227.

Patented Sept. 14, 1886.

Fig. 2.

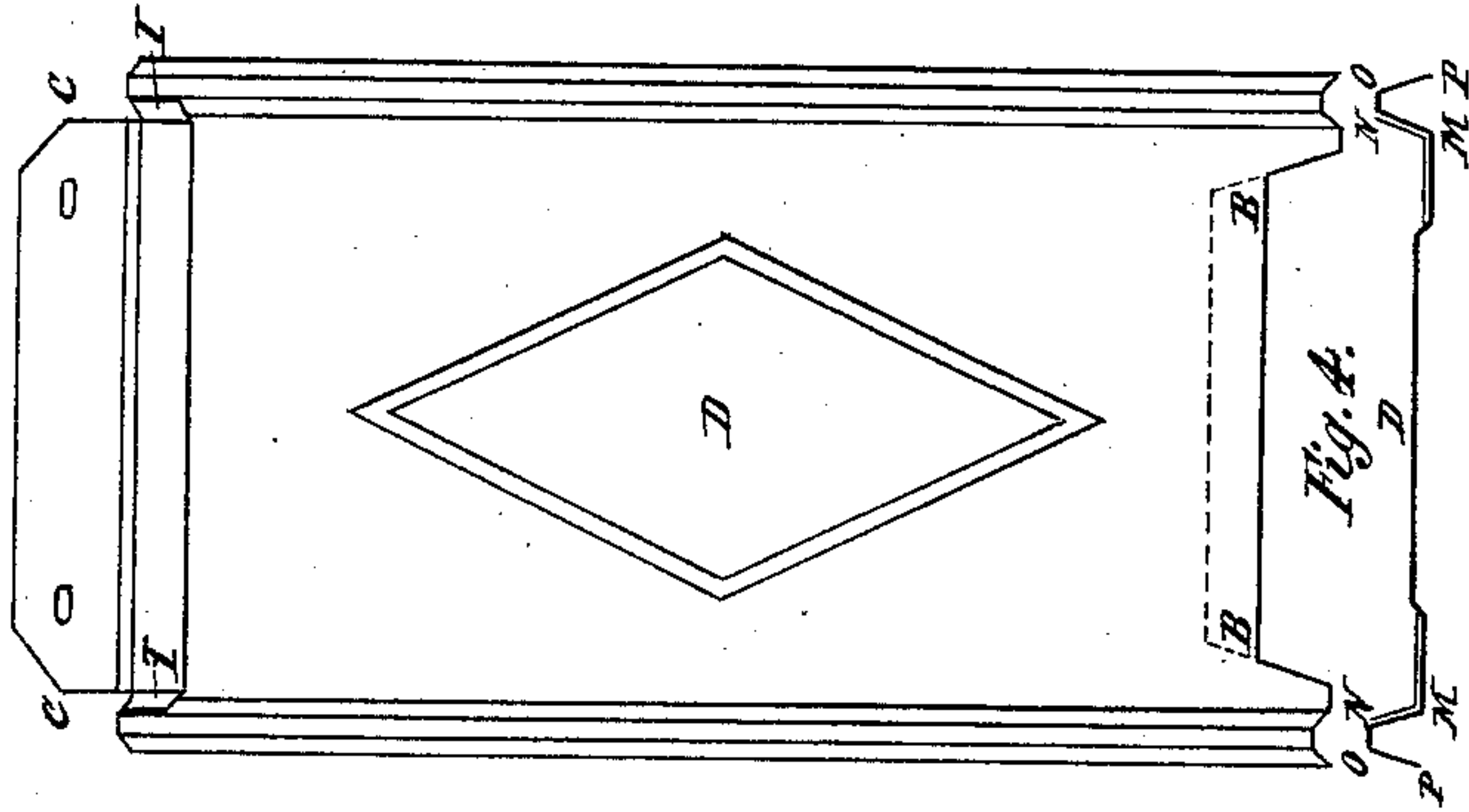


Fig. 3.

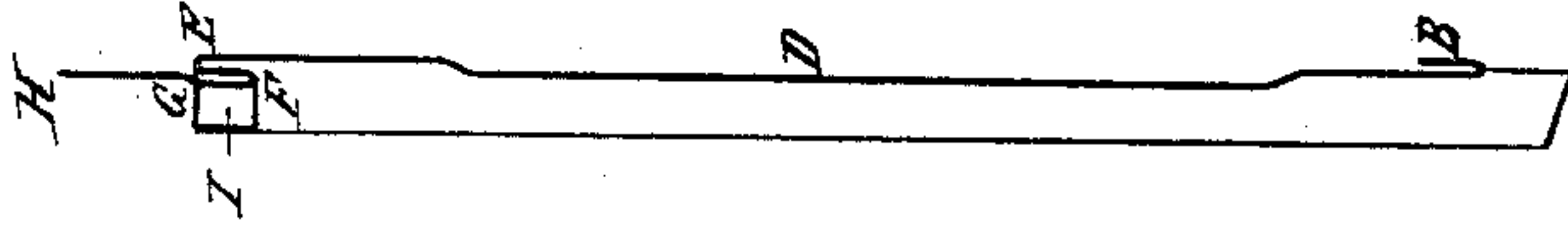
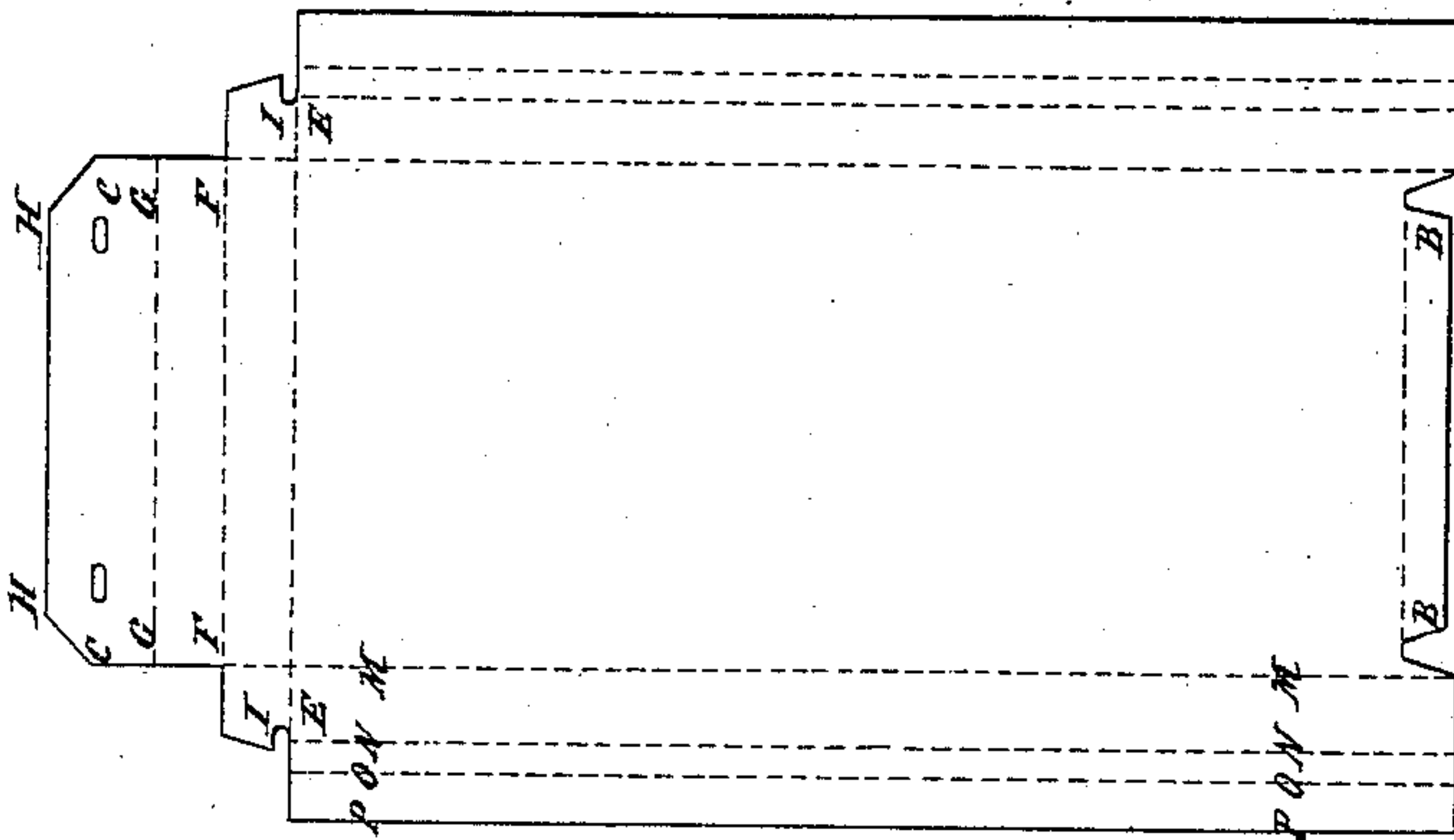


Fig. 1.



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Fig. 12.



Fig. 11.

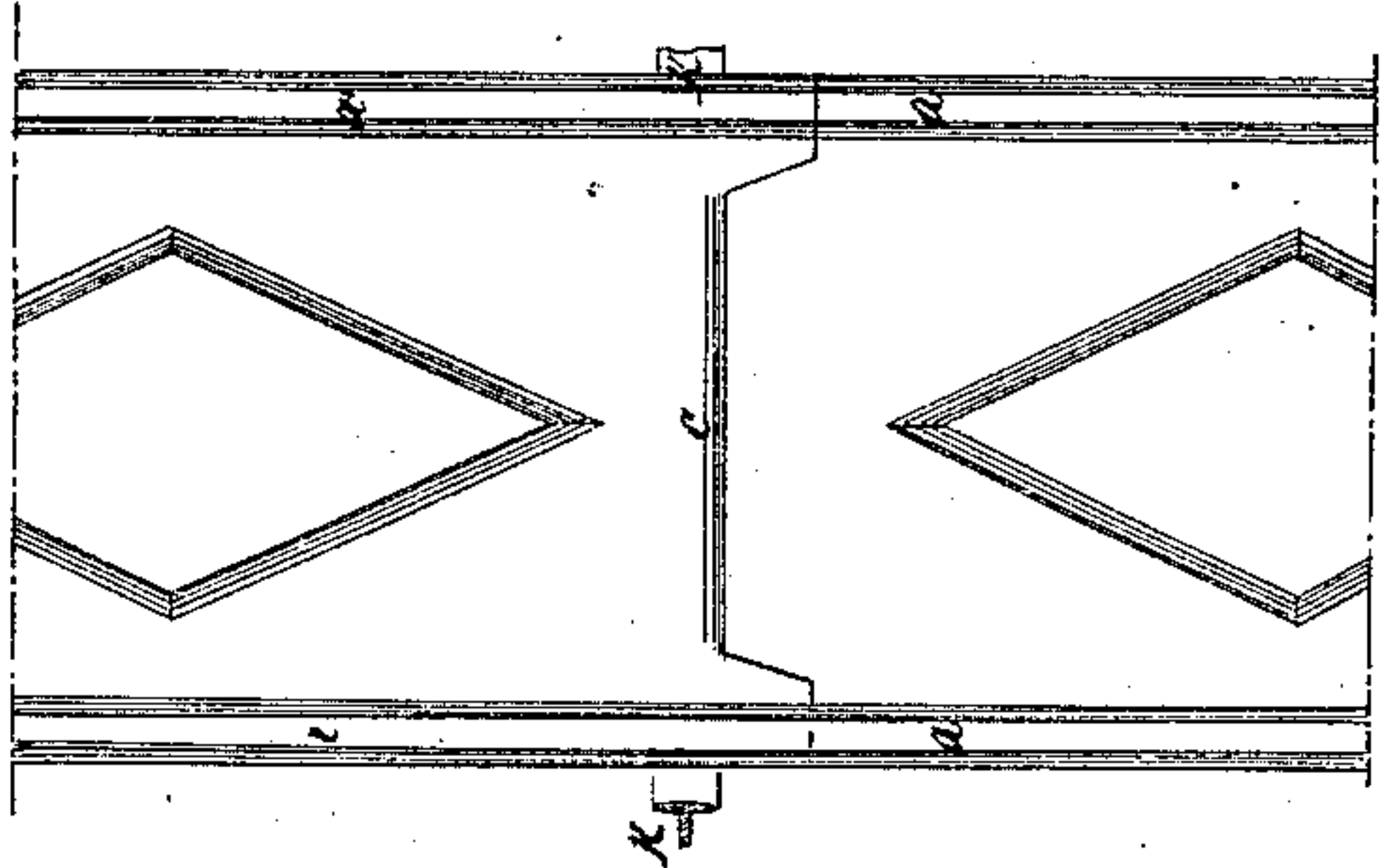


Fig. 10.

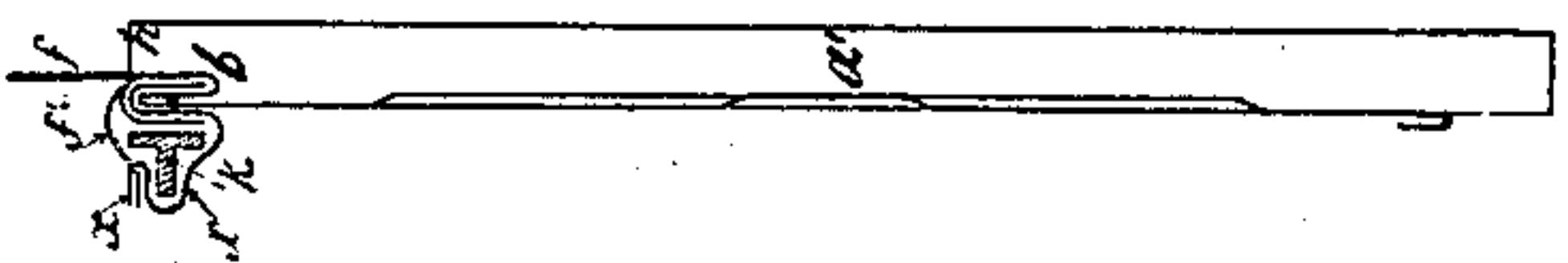


Fig. 9.

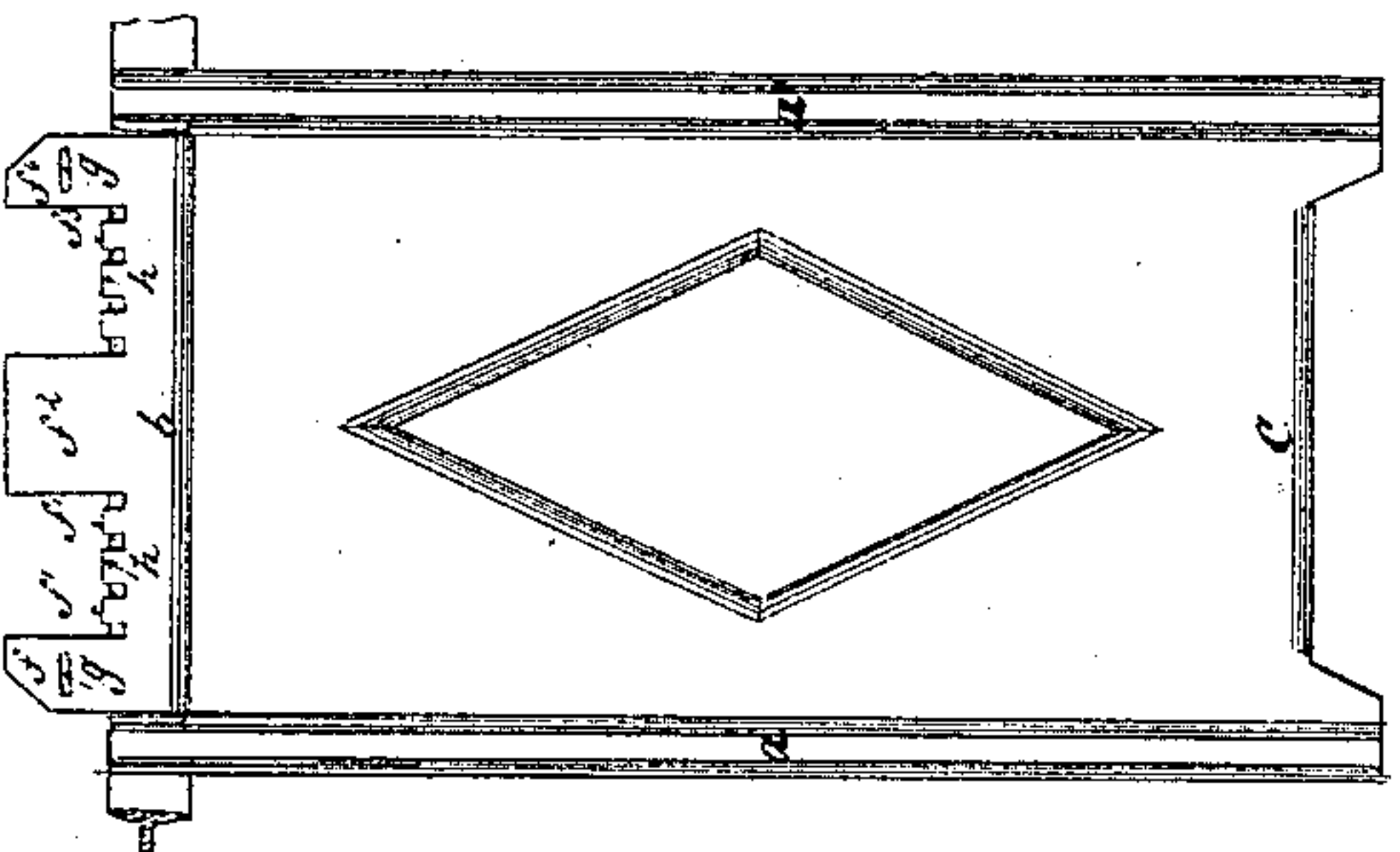


Fig. 6. Fig. 7.

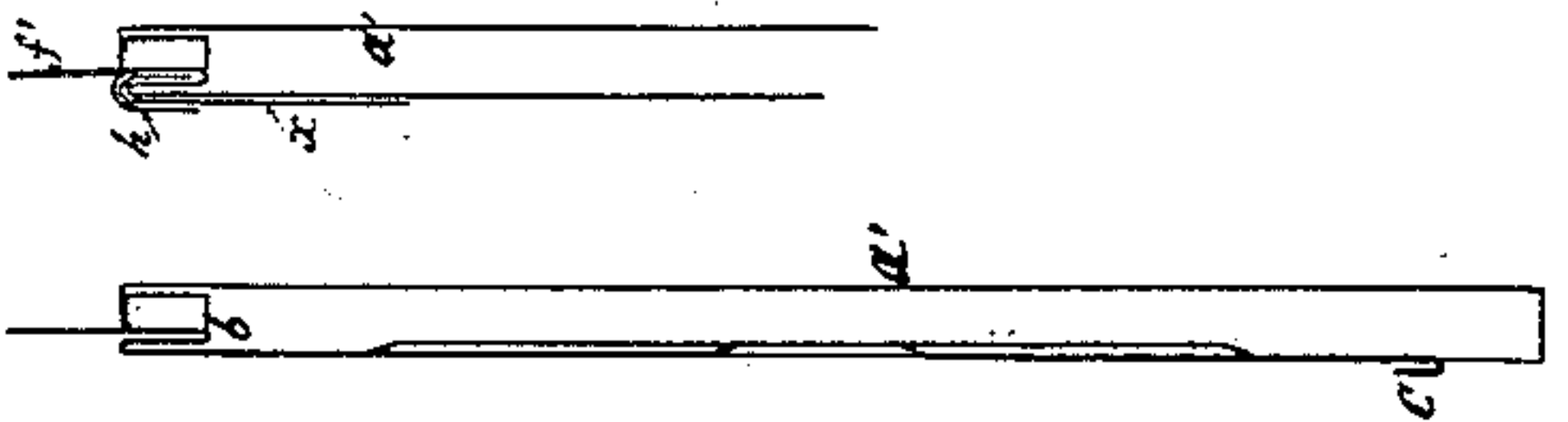


Fig. 5.

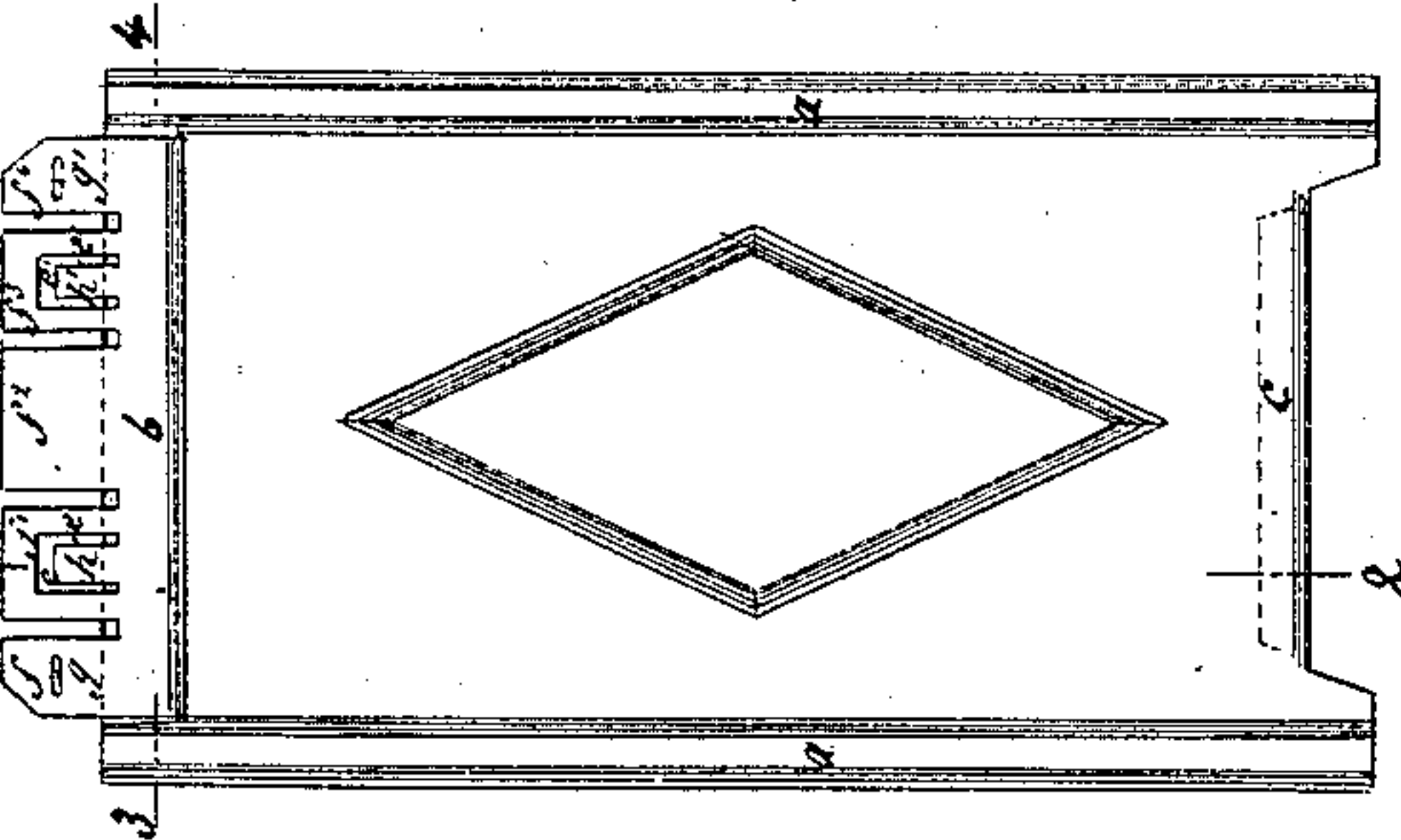


Fig. 15.

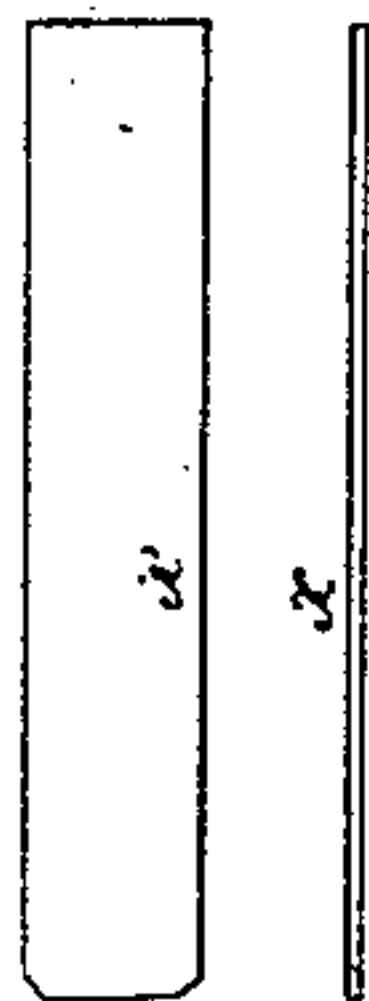


Fig. 8.



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Fig. 20.



Fig. 22.

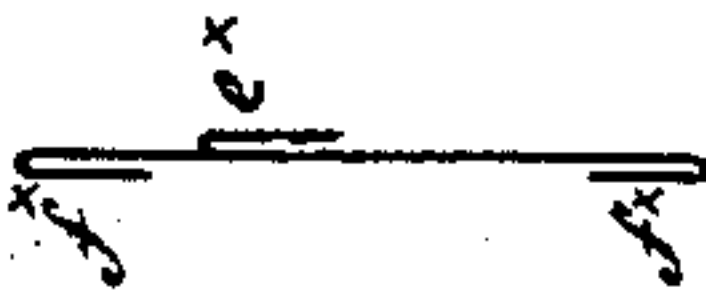


Fig. 18.

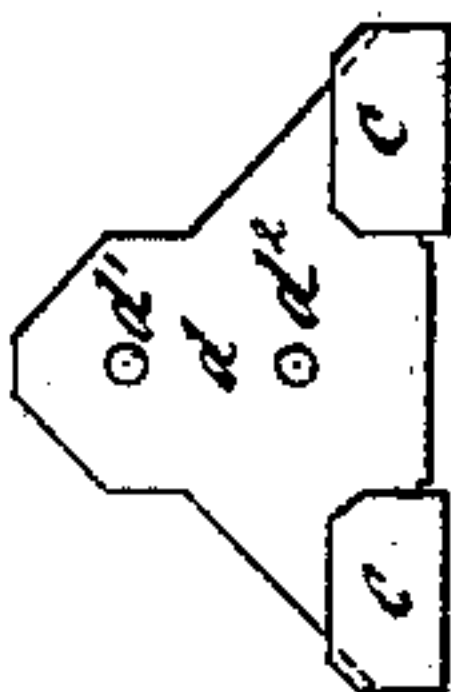


Fig. 19.



Fig. 21.

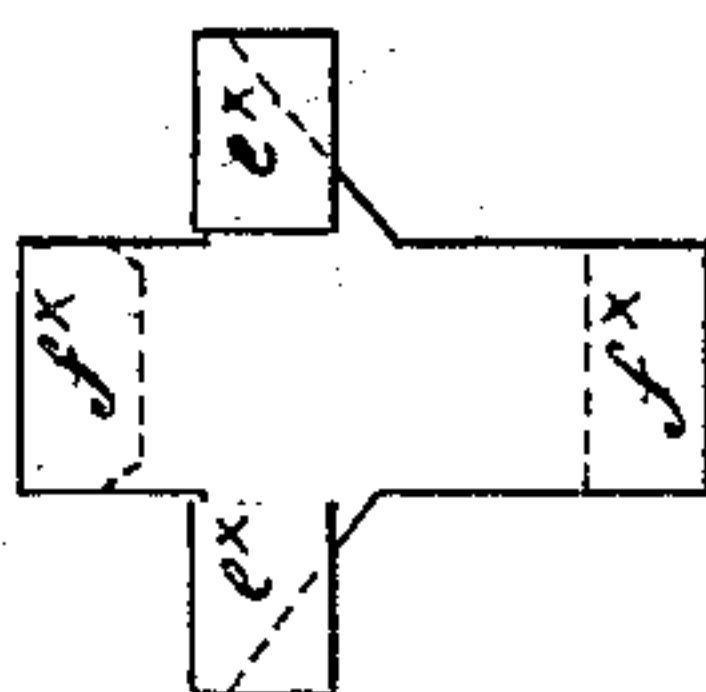


Fig. 23.



Fig. 17.

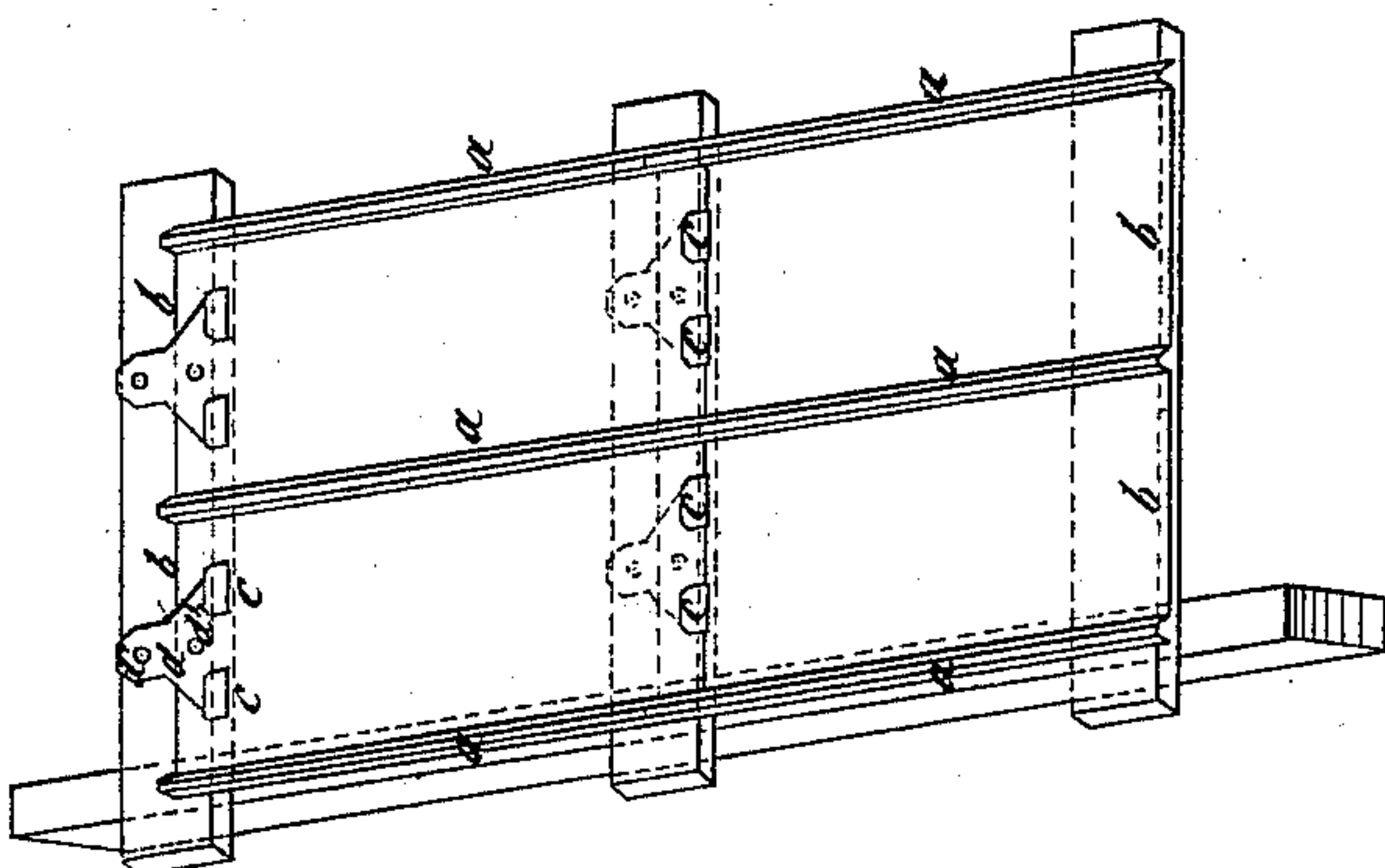


Fig. 16.



Fig. 14.

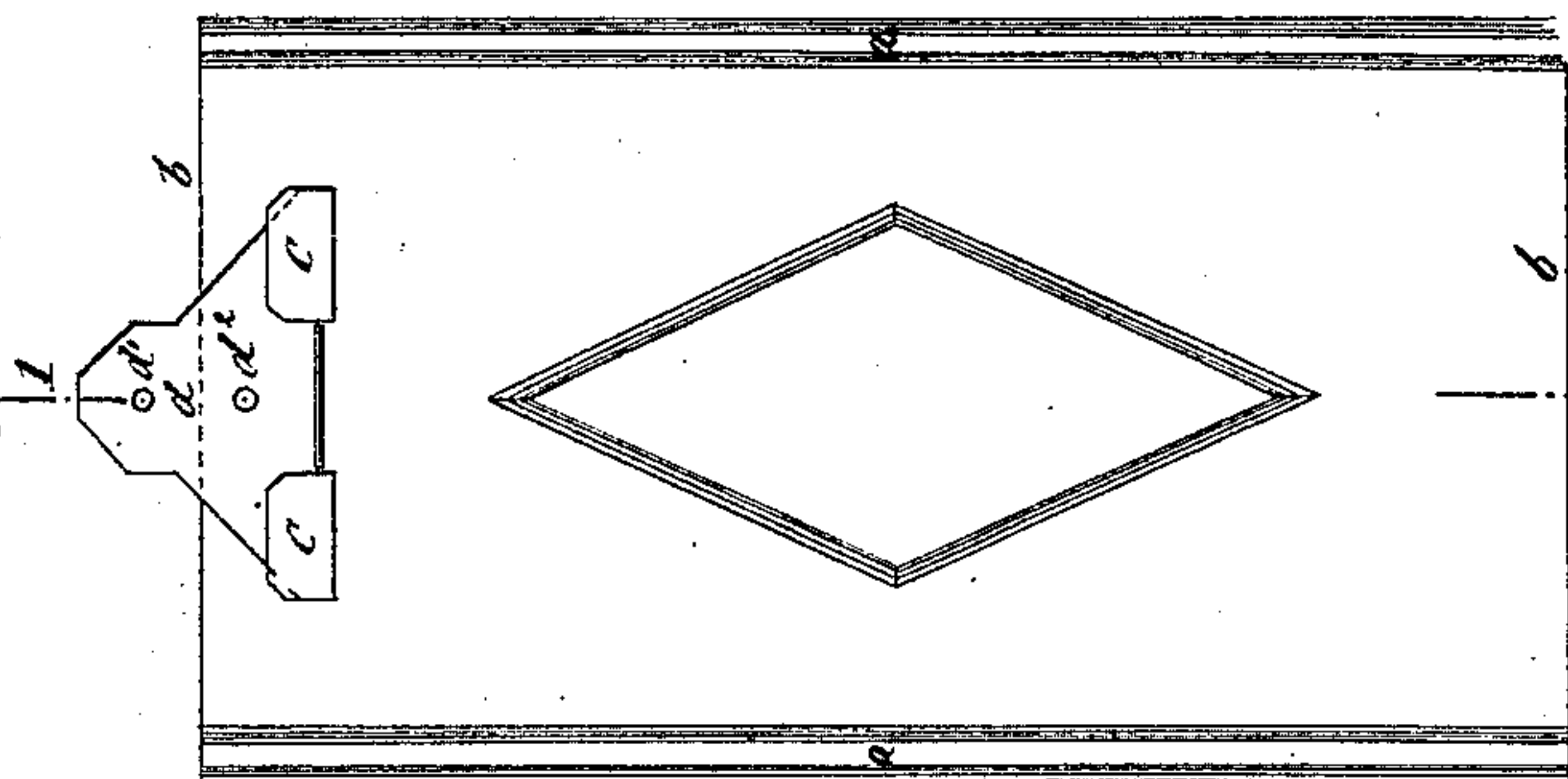


Fig. 15.



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UNITED STATES PATENT OFFICE.

EDMOND LAMAL AND SOSTHÈNE DUPRAT, OF PARIS, FRANCE.

STAMPED ROOFING-TILE.

SPECIFICATION forming part of Letters Patent No. 349,227, dated September 14, 1886.

Application filed March 5, 1886. Serial No. 194,156. (No model.) Patented in Belgium February 5, 1886, No. 52,997.

To all whom it may concern:

Be it known that we, EDMOND LAMAL, manufacturer, and SOSTHÈNE DUPRAT, dealer in metals, of Paris, in the Republic of France, have invented new and useful Improvements in the Construction, Connection, and Arrangement of Tiles or Slates for Roofing, to be called "Stamped Roofing-Tiles," (for which we have obtained in Belgium a patent of invention, No. 52,997, dated February 5, 1886,) of which the following is a specification.

According to the present invention the roofing-tiles are of a simple construction, requiring no adjustment. They are light, easily placed and arranged, and when in place they constitute a complete impervious roofing. The tiles are preferably of zinc; but iron galvanized or covered in any manner, copper, or any appropriate metallic substance may also be used. The tiles are fixed to the lath-work, scantling, or any other wooden or iron frame ordinarily employed in the construction of roofings.

The drawings hereto annexed show the form of one of our tiles and the mode of arranging them, and, besides, the mode of manufacture of these tiles when they are not cast.

Figure 1 shows the sheet as it is before being stamped. The dotted lines indicate how this sheet is ultimately folded or bent to effect the form indicated in plan and section in Figs. 2, 3, and 4. The sides are folded, bent down, or stamped, as shown in section in Fig. 4, so as to form a flange or inverted channel on each side of the tile. The projection or lower extremity, B B, Figs. 1 and 2, is turned down or folded under the sheet, so as to form a hook, B, Fig. 3, serving to clasp the upper hook, F, and adjust itself in the groove E, Fig. 3, of the next lower tile. The hook and the upper groove, E F G, Fig. 3, are formed by bending down the sheet on the line E E, Fig. 1, so that the upper part of the sheet takes the form of a flattened S, as represented in longitudinal and vertical section in Fig. 3. While the hook or upper clasp is formed, the projecting side pieces, I I, Fig. 1, are pressed against the sides of the groove or inverted channel M M, as shown in Fig. 4, thus making the tile less pervious. The upper extremity or projection, C C, Fig. 2, is pierced or perforated in two or several places, so as to facilitate the fastening or nailing to the roof. In addition to what has been described an

embossment, D, of rhomboidal or other shape, is formed by stamping at the center of the tile, Figs. 2, 3, and 4, for the purpose of doing away with the effects of changes of temperature, and increasing the strength and solidity of the roofing.

The lateral joining of the tiles is accomplished by making the lateral flange, M N O P, Fig. 4, of one tile enter the side groove of the adjoining tile, so as to form a kind of grooved joint. Each tile is fastened to the lower tile by hooking the lower folded projection, B B, Fig. 3, of the upper tile into the upper folded and grooved projection, E F G, Fig. 3, of the lower tile. This arrangement prevents water, snow, or wind penetrating under the tiles or between their joints, and it increases also the solidity of the covering. The forms and dimensions of these tiles may be varied at will, their arrangement remaining substantially as described and represented.

Figs. 5 to 13, inclusive, represent an economical practical means of fastening metallic tiles as well on iron as on wood. The head of each of the metallic tiles presents a certain number of cuts, with which and by the addition of complementary projections the most inexperienced workman may in doing the work clasp the iron of the lath-work whatever be the section. These cuts and the hooks produced thereby in no way modify the system of covering resulting from the model of tile adopted. They permit also and without change the application of the tiles by nailing to wooden lath-work.

Fig. 5 of the annexed drawings shows a zinc tile of our manufacture, which we have modified so as to allow of its easy application either to iron or wooden lath-work. This tile has its longitudinal edges *a a'* raised in trapezoidal sections in order to hook them by superposition, to the corresponding sides of the neighboring tiles. Above and below its transverse edges are cut and folded over on themselves so as to constitute above a kind of exterior hook, *b*, and below a kind of interior hook, *c*. In forming the covering, the hook *b* of the lower tile engages the hook *c* of the tile of the upper row, so that the two rows of tiles are solid, one with the other, at the same time that the tiles of the upper row overlap those of the following row, forming on all sides joints perfectly water-tight, which do not pre-

vent expansion or contraction. The folding over of the transverse edge, which constitutes the hook *b*, is made so as to receive also a projection sufficiently long in view of the fastening of the tile to the lath-work. It results from this that the bending over of the hook *b* presents two thicknesses of lapped metal. In the projection prolonging thus the body of the tile, without the longitudinal edges *a a'*, we cut slits *d d' d'' d'''*, which give five tongues, *f f' f'' f''' f''''*, symmetrically, two by two, starting from that of the middle, *f''*. In the tongues *f' f''* we cut at the same time slits *e e'*, which produce two little tongues, *h h'*, and, lastly, the extreme projections *f f'* are pierced with oblong holes *g g'*, destined for nails for fastening the tile on the wooden lath-work.

Fig. 6 is a longitudinal section of Fig. 5 on the line 1 2. Fig. 7 shows in similar section the rabbeting of one of the tongues *h h'* over a band of zinc, *x*, whose extremity is previously forced between the two thicknesses of metal of the hook *b*. Fig. 13 indicates in two views one of the bands or complementary projections. Fig. 8 is a transverse section on the line 3 4, Fig. 5, indicating the several thicknesses of metal found in the hook *b*. Fig. 9 indicates a tile fixed on a T-iron, *K*. Fig. 10 is a section of the parts hooked together.

To accomplish the fastening of the tile on a T-iron, for example, we commence, as we have just explained, by placing the two projections *x* under the tongues *h h'*, and we fold over the parts *h x* and *h' x*, so as to turn them completely on the tile, Fig. 7. Then the tile being placed on the iron, the parts *h x*, *h' x* are raised and the projections *x x* made to surround the iron as much as possible. It remains then to turn the tongues *f' f''* on the iron *K*, taking care simultaneously to pass the projections *x* in the countersinks of the said tongues *f' f''*. It remains, finally, to raise the jutting extremities of the projections *x x* in order to produce the absolute hooking of the tile to the iron, Fig. 10. We may remark that the iron clasped is totally surrounded by the combination of the tongues *f' f''* with the projections *x x*, engaged one with the other. Consequently, the section of the iron is independent of the system of joining whose constituent parts need only be long enough to surround the iron and engage with each other.

Figs. 11 and 12 indicate an exterior face view and longitudinal section of two tiles joined and fixed to the T-iron lath-work. From what precedes, the mode of assembling will be understood, but as to the hooking of the tiles together there is nothing peculiar. When for the iron wood is substituted, the complementary projections *x* are not employed, and without bending or rabbeting any of the tongues *f f' f'' f''' f''''*, the extreme tongues *f f'* alone being nailed to the wooden lath-work.

Figs. 14 to 23, inclusive, show a modification of the system with double or triple hooks, specially applicable in case of temporary constructions or for roofings whose inclination is

pronounced enough. Fig. 14 is a face view of the tile covered by a double hook. Fig. 15 is a transverse section. Fig. 16 is a section on the line 1 2, Fig. 14, showing the superposition and the hooking of two successive tiles. Fig. 17 is a view of a part of the covering. Figs. 18, 19, and 20 represent in detail the double hook. Figs. 21, 22, and 23 represent a double hook more especially applied to the portage of our coverings.

As shown in the drawings, the metallic tile is stamped with raised longitudinal borders following a trapezoidal section and cut top and bottom normally without means of attachment of any kind. It results only that these metallic tiles overlap like slates, making lateral joint by the superposition of their borders, which are raised and in trapezoidal section. Under these conditions they are retained by double or triple hooks independent, which are nailed on the scantlings holding to them the lower tile and sustaining the upper while leaving to both the liberty of expanding and contracting freely.

The essential characteristics of this tile which forms the third part of our invention, and which result from the simplified conformation of the tile and the independence of the double or triple hook are an important economy, a lightness as great as possible without impairing strength and durability. The effects of capillarity are not to be feared, especially if the inclination is sufficient. The vertical projection of the tile, Fig. 14, is a perfect rectangle, whose longer sides, *a a'*, are stamped in inverted V shape, and whose shorter sides, *b b'*, are cut flatly and parallelly. The raised borders *d d'* engage by superposition with the corresponding borders of the adjoining tiles, and in the placing of the covering the upper tiles simply overlap the lower ones to a degree proportional to the inclination of the roof.

The tiles are fixed on the scantling by means of special hooks. (Represented in Figs. 14, 16, 18, 19, and 20.) They are made of a fold of metal, zinc, copper, or sheet-iron cut to forms and dimensions suitable to permit the formation of the two hooks *e e'*, and the attachment of the projection *d*. This is nailed on the scantling at *d' d''*, one of the nails, the lower, passing through the thickness of the tile which is lapped. The lapped tile is supported and maintained by the hooks *ee*, whose separation is sufficient to assure the rigidity of the tile independently of the neighboring tiles.

The attaching-plate (shown in Figs. 21, 22, and 23) is provided with a number of hooks, *e^x e^x'* and *f^x f^x'*, turned toward the opposite sides of the plate, the former being designed to engage the lath-beam or other support, whereby the plate is maintained in position, while the latter are designed to engage the hooks of the tiles, as already explained. The forms and sizes of the several parts may of course be varied at pleasure without departing from the

spirit of our invention. Likewise the embossment D may be given a more ornamental design, so as to heighten the decorative effect, while at the same time strengthening the tile.

5 Having thus described our invention and the manner of carrying it out, what we claim is—

1. The combination, with the lath or support K, and the tile having the hook *b*, and a
10 slotted tongue, of the band or projection *x*, encircling said lath or support, and engaging at its respective ends with said hook and the slot of said tongue, substantially as set forth.

2. A roofing-tile having fingers or tongues
15 projecting from the edge thereof, said fingers or tongues having slots forming additional shorter fingers or tongues *h*, &c., substantially as and for the purpose set forth.

3. A metallic roofing-tile having fingers or
20 tongues projecting therefrom and slots formed in said fingers or tongues, substantially as set forth.

4. The combination, with the bent tongues
25 *f' f³* and *h h'* of the corresponding bands or projections *x x*, to constitute means of hooking

the tile on an iron frame-work, the latter being completely or partially surrounded by the said tongues and projections, as described and shown.

5. The combination, with a metallic roofing-
30 tile having a hook, substantially as described, of a separate attaching-piece, *x*, having a complementary hook and means for securing it to the lath or other support, substantially as set forth.

6. A roofing-tile having at its edges grooves
35 or embossments of substantially inverted-U shape, a return-bend at one end, and the tongue I, formed integrally with the turned-over portion, and the adjacent side of said groove or
40 embossment, against which latter it is bent, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

EDMOND LAMAL.
SOSTHÈNE DUPRAT.

Witnesses:

ROBT. M. HOOPER,
DAVID T. S. FULLER.