

(No Model.)

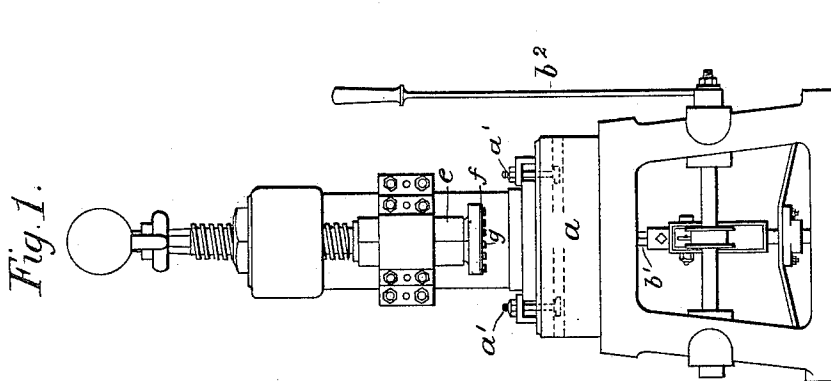
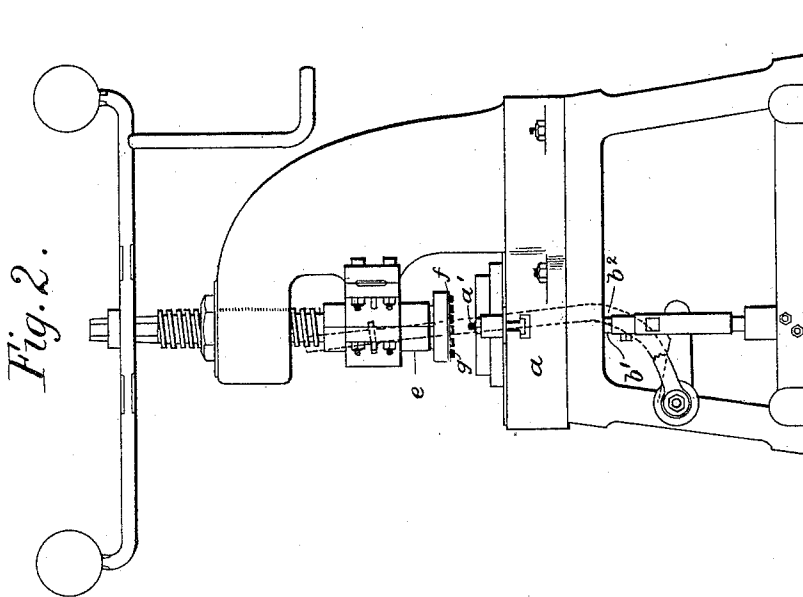
5 Sheets—Sheet 1.

H. L. DOULTON & S. H. LEECH.

FORMING UNDERCUT PROJECTIONS AND RECESSES IN TILES, &c.

No. 462,895.

Patented Nov. 10, 1891.



Witnesses.
Wm. H. Barr.
Baltus DeLong.

Inventors.
Henry Lewis Doulton.
Stephen Henry Leech.
By atty.
Baldwin, Dandson & Malt.

(No Model.)

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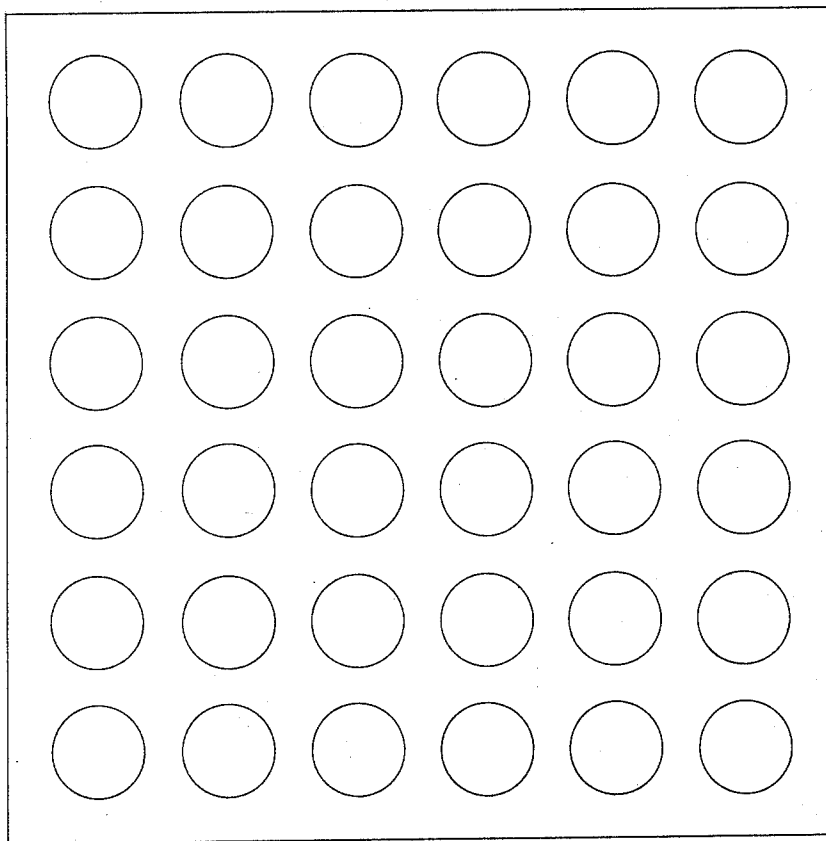
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Fig. 3.



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Paulson, Davidson & Wright.

(No Model.)

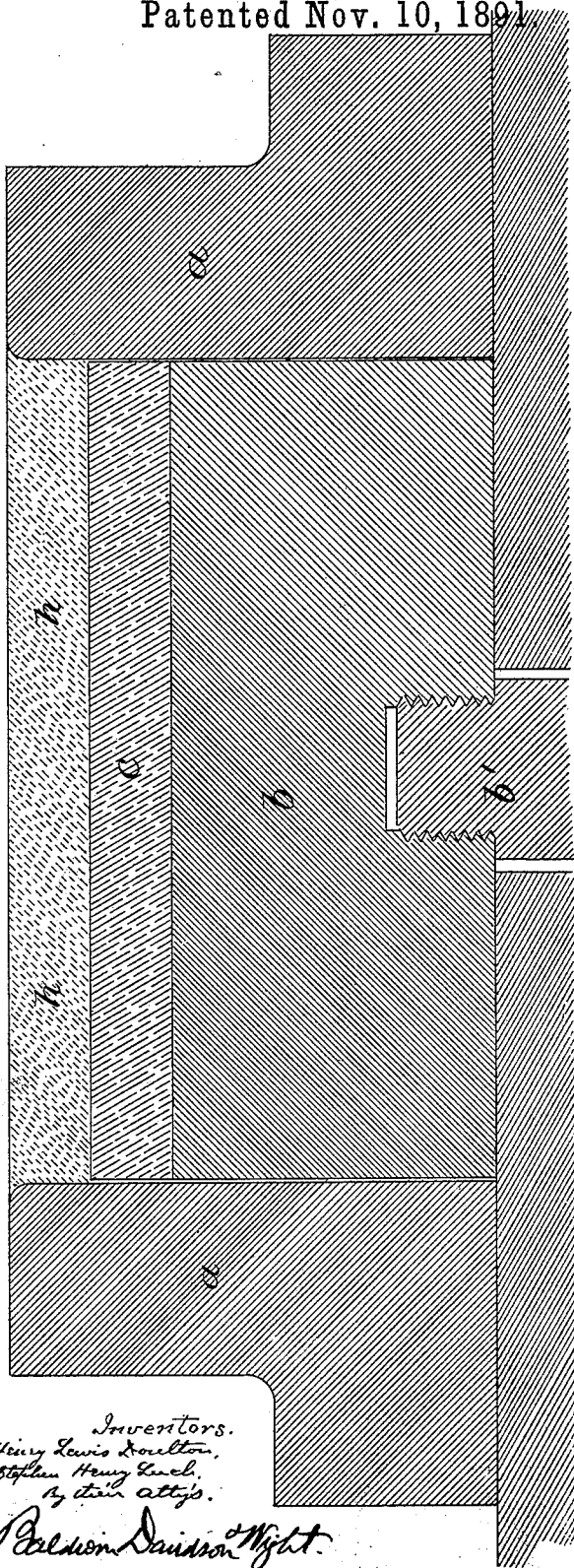
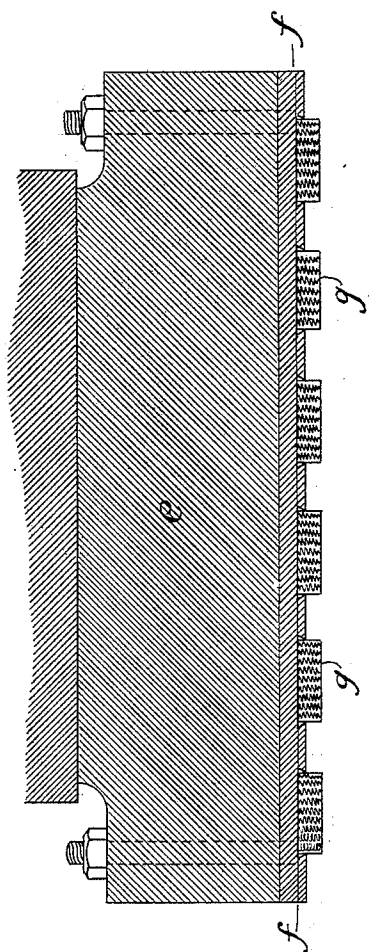
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Witnesses.
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(No Model.)

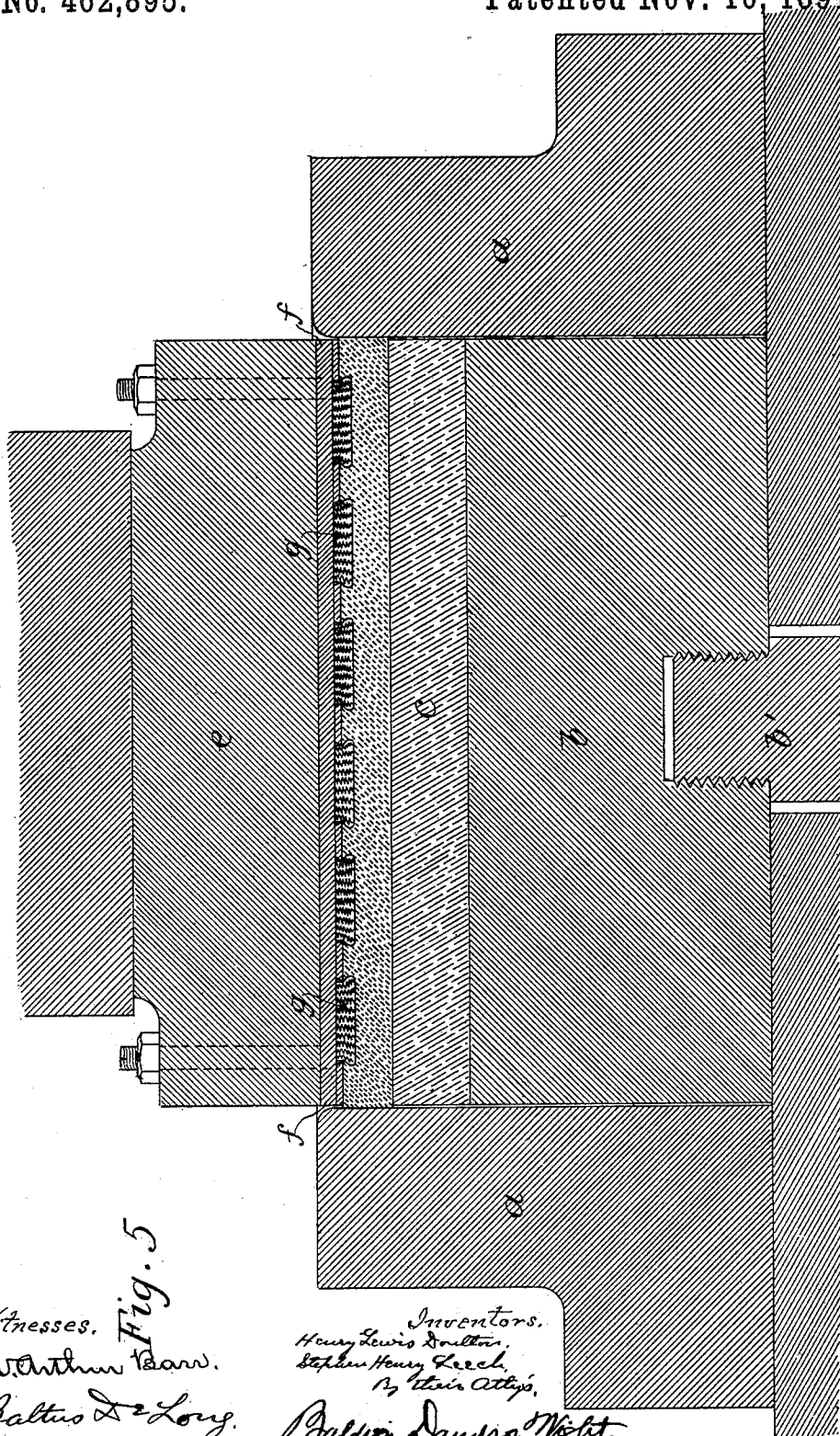
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Witnesses.

W. Arthur Carr.

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(No Model.)

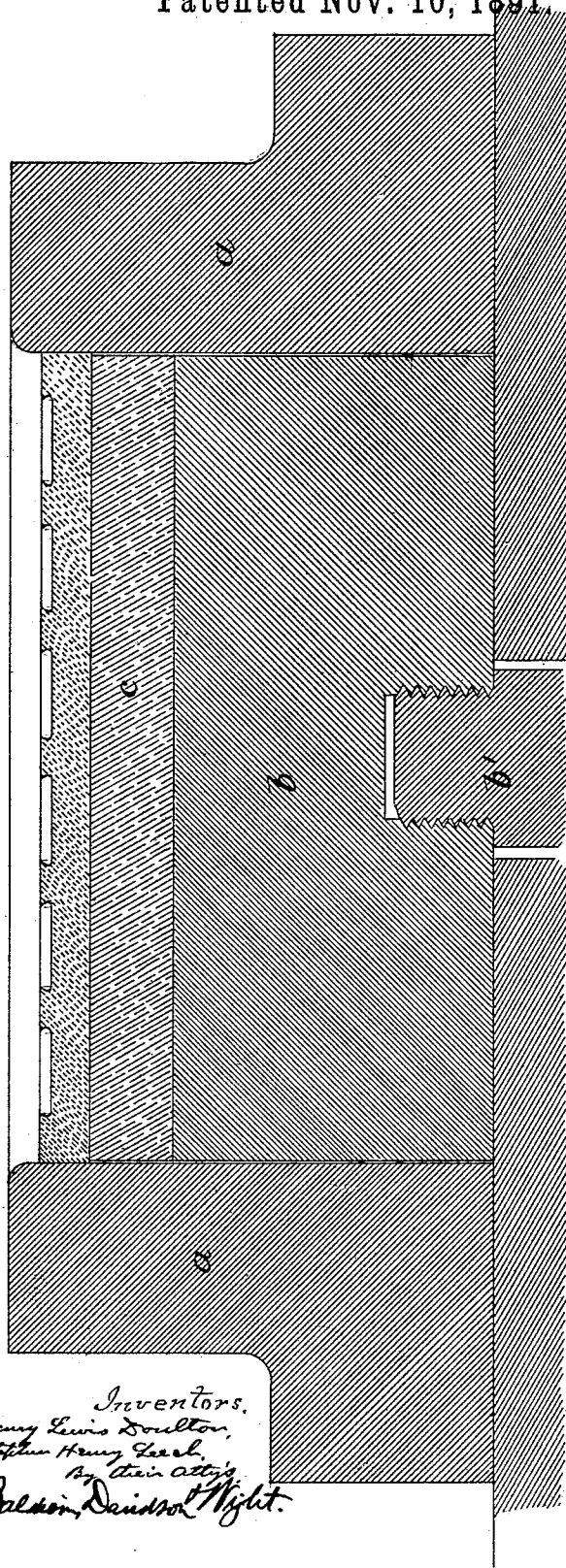
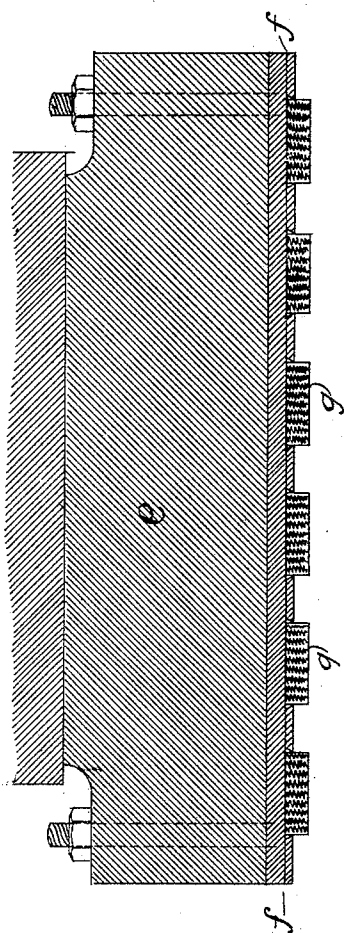
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UNITED STATES PATENT OFFICE.

HENRY LEWIS DOULTON AND STEPHEN HENRY LEECH, OF LAMBETH,
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FORMING UNDERCUT PROJECTIONS AND RECESSES IN TILES, &c.

SPECIFICATION forming part of Letters Patent No. 462,895, dated November 10, 1891.

Application filed June 20, 1891. Serial No. 396,993. (No model.)

To all whom it may concern:

Be it known that we, HENRY LEWIS DOULTON, potter, and STEPHEN HENRY LEECH, manager, subjects of the Queen of Great Britain, both residing at the Albert Embankment, Lambeth, in the county of Surrey, England, have invented certain new and useful Improvements in Forming Undercut Projections and Recesses in Tiles and other Articles of Pottery, and in apparatus therefor, of which the following is a specification.

According to this invention we form undercut projections or recesses by pressing against the clay pieces or perforated sheets of india-rubber or other elastic material, one face of which is held while the face next the clay spreads out laterally by the pressure.

We proceed as follows: We fill a mold with powdered clay, as is usual. The mold is the same as those at present employed, except that on one or more of its faces we fix projections of india-rubber or other elastic material if it is desired to make undercut holes, or a sheet of india-rubber having holes in it if it is desired to make undercut projections. The mold having been filled, pressure is applied, the result being that the india-rubber or other elastic material spreads laterally on its face next the clay while the surface which is in contact with or fixed to the side of the mold remains at rest, or nearly so. Thus in the case of projecting pieces their faces next to the clay become broader than their faces next to the mold, and in the case of holes in a sheet the diameter of the hole next to the clay becomes smaller than the diameter of the hole next to the mold, and undercut holes or projections, respectively, are formed in the clay. When the pressure is relieved, the india-rubber or other elastic material resumes its former shape, which facilitates delivery.

Figure 1 is a front elevation, and Fig. 2 is a side elevation, of the apparatus we employ. Fig. 3 is a back elevation of a tile produced according to our invention; and Figs. 4, 5,

and 6 are sections, to a larger scale, of the mold and plunger in different positions.

The press shown is a screw-press of ordinary construction. It is provided with a mold-box *a*, held down to the bed by bolts *a'*. In this mold-box there is a follower *b*, actuated by a spindle *b'* and lever *b''*. *c* is a filling piece or die placed upon the follower *b*. Its upper surface may be engraved so as to produce a pattern upon the tile in the ordinary manner. *e* is the plunger of the press, and bolted to it is a compound plate *f*, upon whose face are blocks *g* of india-rubber or other elastic material. The compound plate is made by brazing together a plain plate and a plate with taper holes in it, as shown, to receive the blocks of india-rubber which are forced into them. The portion of the mold above the plate *c* having been filled with powdered clay *h*, as shown in Fig. 4, the plunger is forced down and the pressure causes the blocks *g* to swell laterally, producing undercut recesses in the clay, as shown in Fig. 5. The plunger *e* is then raised, as shown in Fig. 6, and then the follower *b* and the compressed tile are removed. As the pressure is relieved, the blocks *g* resume their original shape and therefore withdraw from the undercut recesses without breaking the edges.

We lay no claim to the mechanism of the press shown in the drawings, which is of ordinary construction, the sole novelty lying in the blocks *g* on the face of the plunger *e*. It must also be understood that we do not limit ourselves to any particular shape for the blocks *g*, which, in place of being disks, as shown, may be in the form of letters or designs, or, as above explained, a single sheet with holes of the desired contour in it. In place also of the blocks *g* being upon the plunger *e*, they may be upon the follower, or both upon the plunger and follower, so as to produce undercut recesses or prominences upon both faces of the tile or other article.

What we claim is—

1. The process of forming undercut projections and recesses in tiles and other articles of pottery by pressing pieces or perforated sheets of india-rubber or other elastic material upon part of the surface of the clay from which they are made.
2. A press for producing tiles or other articles of pottery, having upon one or more of the interior surfaces of the box or mold in which clay is pressed pieces or perforated sheets of india-rubber or other elastic material.

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