

(No Model.)

4 Sheets—Sheet 1.

H. BAGGALEY.
MANUFACTURE OF TILES.

No. 471,740.

Patented Mar. 29, 1892.

Fig. 3.

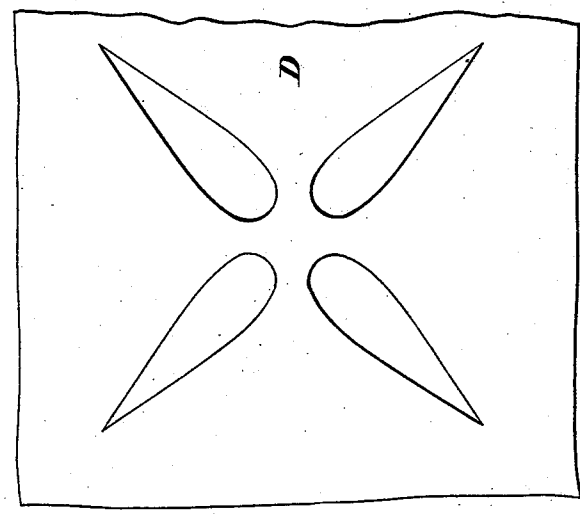
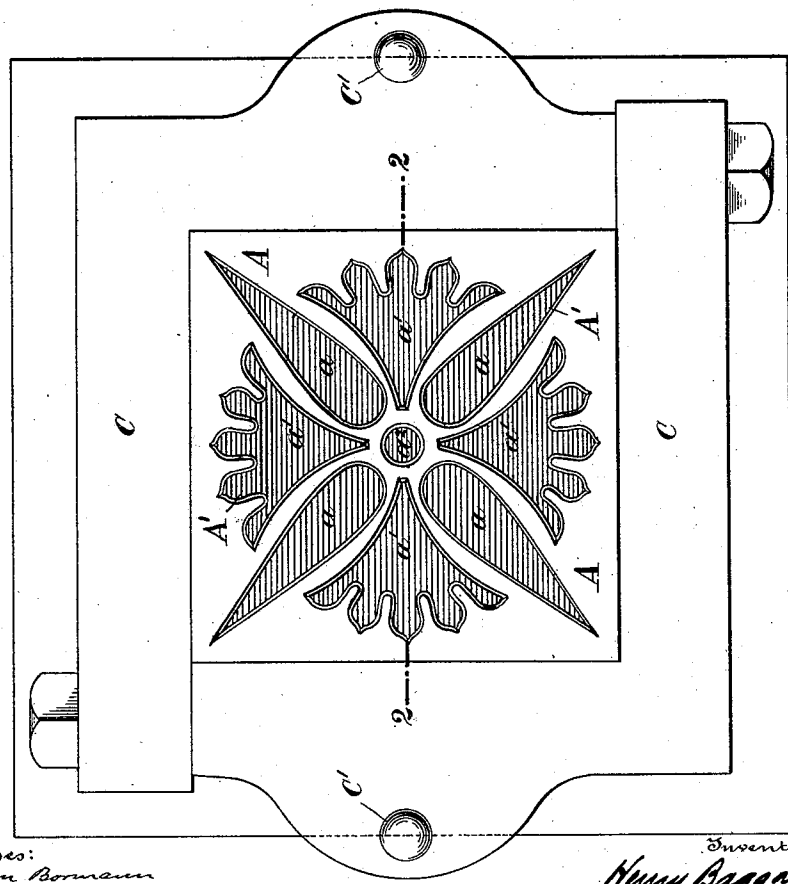


Fig. 1.



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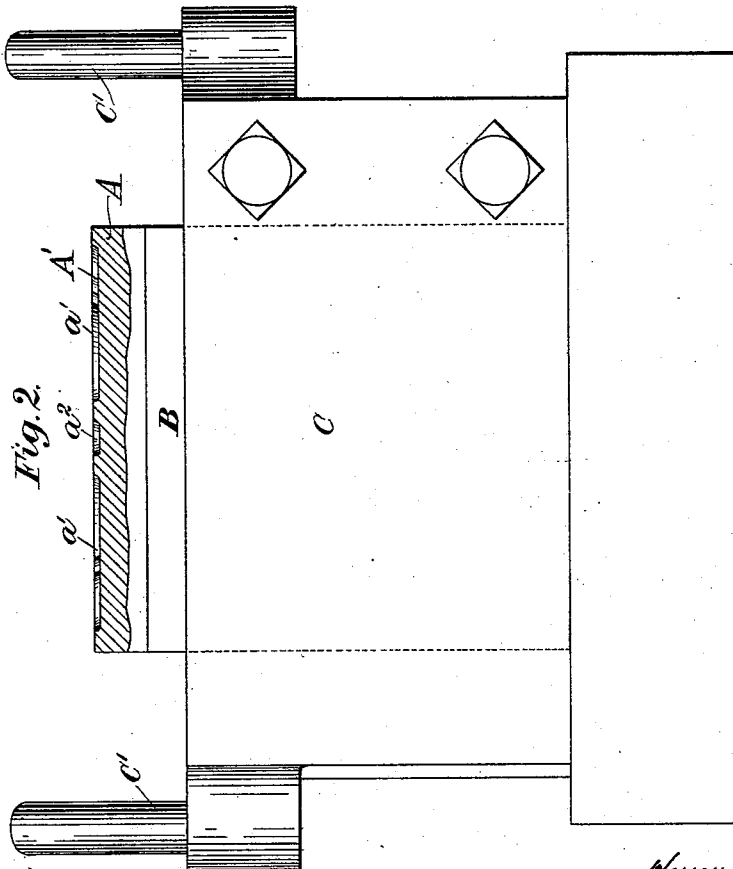
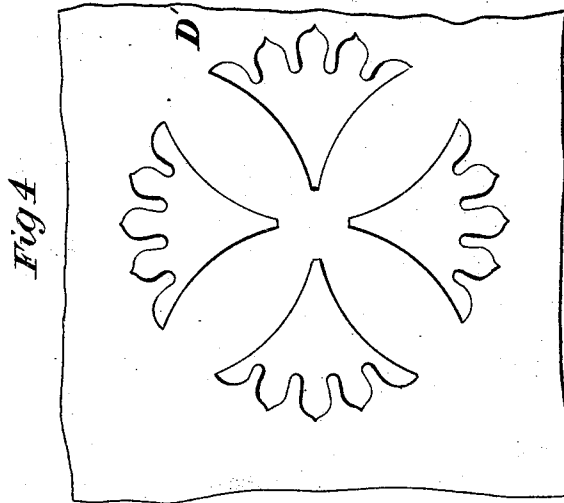
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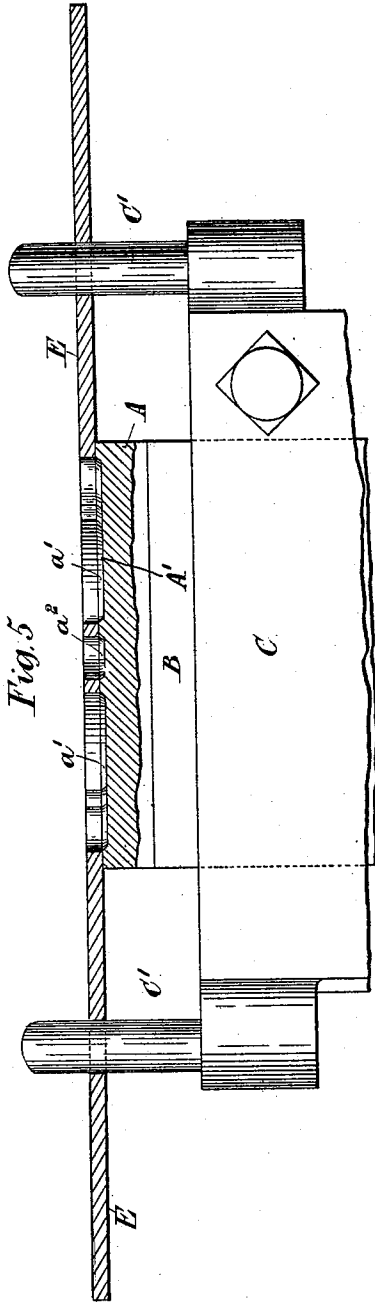
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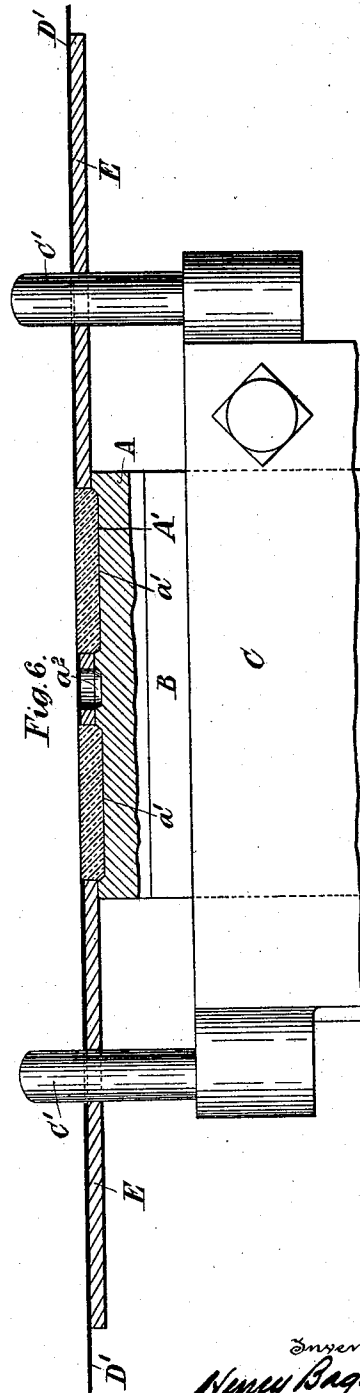
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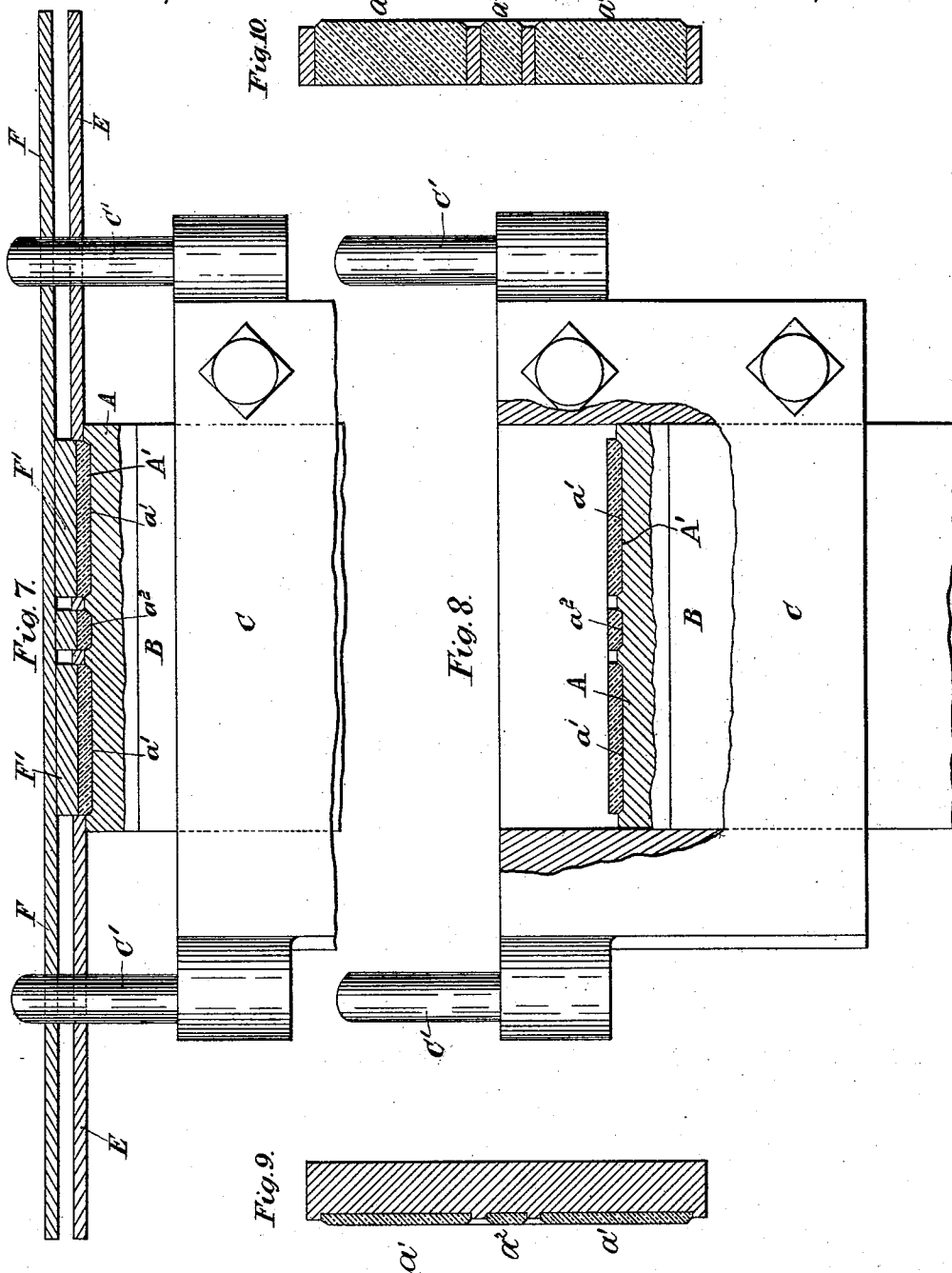
(No Model.)

4 Sheets—Sheet 4.

H. BAGGALEY.
MANUFACTURE OF TILES.

No. 471,740.

Patented Mar. 29, 1892.



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UNITED STATES PATENT OFFICE.

HENRY BAGGALEY, OF STOKE-ON-TRENT, ENGLAND.

MANUFACTURE OF TILES.

SPECIFICATION forming part of Letters Patent No. 471,740, dated March 29, 1892.

Application filed March 14, 1891. Serial No. 384,989. (No specimens.)

To all whom it may concern:

Be it known that I, HENRY BAGGALEY, a subject of the Queen of England, residing at Stoke-on-Trent, England, have invented certain new and useful Improvements in the Manufacture of Tiles and other Porcelain, Earthenware, and Similar Goods; and I do hereby declare the following to be a full, clear, and exact description of the same.

10 This invention relates to the manufacture of inlaid and embossed tiles and other goods or articles made of various kinds of porcelain, earthenware, marl, and the like; and in carrying the invention into practice I prefer to proceed as will presently appear.

Hitherto it has been customary when producing inlaid tiles to mold them upon a flat surface, thus producing a flat surface in the result, the pattern being inlaid in the body 20 of the tile, or where embossed designs have been made they have all been produced in the one color subsequently painted. Now, by my invention I can produce upon a plain ground an embossed, inlaid, and colored design, the color of each portion of the design extending entirely through that portion, a distinct color-body being employed for each separate portion.

30 The invention may be carried out in various ways differing as to detail; but the following description will show one method by which I have produced extremely satisfactory results. In making a tile of this description I employ an indented die-plate in which the pattern to appear raised upon the tile is sunk below the level of the plate, and I use in connection with this indented plate plates having certain portions of the design cut out of them similar to the well-known stencil-plates. These 40 plates and the indented die-plate are all adapted to fit in their proper positions in the press, so that in using them the various parts shall properly correspond. Upon the indented plate is placed a pattern-plate having the complete pattern cut out of it. Upon the pattern-plate is placed the first of the stencils. The indented plate and pattern-plate form a sectional mold of which the pattern-plate comprises the upper section and the indented 50 plate the lower section. The opening or openings in this first stencil are filled with the requisite color-body, and the stencil is then

removed and No. 2 stencil placed upon the pattern-plate, and the same operation repeated with that and the succeeding stencils until 55 the whole of the pattern in its various colors is complete. The last of the stencils is removed, and a stamper having the pattern raised upon it in high relief is placed upon the pattern-plate, so as to compress the dust 60 in the various parts of the pattern. The pattern-plate is now lifted off, carrying the stamper, which is of considerable weight, with it, and the whole design appears upon the indented plate or lower section of the mold, 65 standing above the indented plate and partly within it. An apparatus known as the "tool-box" is now raised up all round the indented plate and the design upon it, like the molding-box of an ordinary molding-machine for 70 metal casting, and in this box the material of which the body of the tile is to be made is first carefully applied and then the whole of the tool-box filled up. After this a plunger comes down in such a manner that the whole 75 of the tile is compressed to the required consistency and thickness, with the result that in the body of the tile, which may be all of the one color, is the pattern inlaid of the required depth, each portion of it having its own 80 proper and complete color and the whole pattern projecting beyond the tile. The tile can now be removed from the indented plate and press and is ready for firing and may be glazed or not, as required.

85 In the accompanying drawings, Figure 1 is a plan showing the indented die-plate in position upon the press-block or anvil and the tool-box in its lowered position. Fig. 2 is an elevation of Fig. 1 with the molding-face of the indented die-plate in section on the line 2 2 of Fig. 1. Figs. 3 and 4 are views of portions of the stencil-plates. Fig. 5 is a view corresponding to the upper part of Fig. 2, but with the pattern-plate in position; and Fig. 95 6 is a similar view with a stencil-plate on the pattern-plate and the ornament-producing dust filled in. Fig. 7 is a similar view with the stencil-plate removed and showing the stamper in operation. Fig. 8 is a view generally similar to Fig. 2 and showing the tool-box raised and the apparatus otherwise ready 100 for receiving the dust for forming the tile-body. Fig. 9 is a section through a tile in

which the design extends to a small extent into the tile-body, and Fig. 10 is a similar section showing the design extending completely through the tile-body.

5 Like letters indicate like parts throughout the drawings.

A is the indented die-plate in which the pattern is sunk to the required depth; B, the block or anvil on which it is supported in the
10 press, and C is the tool-box capable of being raised and lowered around the anvil, as shown in Figs. 8 and 2, respectively.

C' are the usual stud-pins secured in the tool-box C, and over which are passed the
15 holes in the various pattern and stencil plates to insure their always being in proper operative position over the die-plate A, as herein-after explained.

D D', Figs. 3 and 4, are two different stencil-plates which are used when it is desired
20 to produce a tile with the design shown in Fig. 1 in two colors, the plate D enabling the indentations a of Fig. 1 to be filled with dust of one color to the exclusion of the indentations a' and a^2 , and the plate D' enabling the
25 indentations a' to be filled with dust of another color to the exclusion of a and a^2 , while if it be necessary to have another distinguishing color for a^2 this may be inserted by means
30 of another stencil-plate having a central opening, but no openings over the indentations a and a' .

E, Figs. 5, 6, and 7, is the pattern-plate or upper section of the sectional mold, and F F',
35 Fig. 7, is the stamper, both of which are provided with holes for passing over the pins C', as shown in these figures. The projections F' of the stamper are an exact reproduction in high relief on plate F of the pattern on the
40 die-plate and (according to the design taken for illustration) represented in Fig. 1, and another reproduction of which perforates the pattern-plate E, or upper section of the mold.

When it is desired to construct a tile with
45 the before-described apparatus, the tool-box C is moved to its lowest position, and, the lower section of the mold or indented die-plate A having also been properly secured on the anvil B, the upper section of the mold or pattern-plate E is placed upon it, as shown in Fig. 5.
50 If the whole design is to be produced in one color only, no stencil-plate will be required, for it will be sufficient merely to completely fill up the openings of the pattern-plate with
55 dust of the desired color, this dust falling into and also filling up the indentations in the indented die-plate A. If, however, the design is to be produced in three different colors—say, for example, pink in indentations a' , green in indentations a , and blue in the central indentation a^2 —then stencil-plates are employed as follows: The stencil-plate D' is laid on the pattern-plate E, and the indentations a' and corresponding parts
60 of the design in the pattern-plate E, as shown in Fig. 6, are filled with pink dust through the openings in stencil-plate D', the dust be-

ing properly distributed in said openings and the superfluous dust being removed from the surface of D' by a "striker" or other suitable
70 device. The stencil-plate D' is then removed and plate D put in its place, and the indentations a and corresponding openings in pattern-plate E are filled with green dust. The stencil-plate D is then removed and another
75 stencil-plate having a central opening corresponding to the indentation a^2 is put in its place, and said indentation and central opening in pattern-plate E are then filled with
80 blue dust, the superfluous dust in this, as in all the other filling operations, being removed from the upper surface of the stencil-plate by means of a striker or equivalent device. The various colors of the design being now properly distributed, the last stencil-plate is re-
85 moved and the stamper is put in its place so that its projecting design F' will rest on the dust in the various openings in the pattern-plate, as shown in Fig. 7. The press plunger, lever, or equivalent is then brought to bear
90 on the stamper, with the result that the dust becomes solidified or agglomerated, and after the pressure is withdrawn and the stamper F F' and pattern-plate E removed
95 (these being preferably removed simultaneously) the whole design appears upon the indented die-plate A, standing partly above it and partly within its indentations. The tool-box C is then raised, as shown in Fig. 8, and supported in its raised position by counter-
100 weighted levers or other of the usual means and the space presented above the indented die-plate is filled with dust to form the body of the tile. The whole mass of dust, as usual,
105 is then subjected to heavy pressure, so as to solidify it, and after the removal of the pressure and the lowering of the tool-box C the embryo tile may be lifted off the indented die-plate A and taken away for subsequent drying and firing. It will thus be seen that the
110 finished tile will have the colored design standing out in relief from the body, into which it also extends to a greater or less extent, as shown in Fig. 9, according to the thickness of pattern-plate employed. If it be
115 desired to form the tile with the design extending right through it, as in Fig. 10, the pattern-plate E would be proportionately deep, and the design in such plate could be worked out in thin metal, so as to provide
120 pockets for receiving the body-forming dust, which under these circumstances would also be introduced by means of stencil-plates.

Another manner of producing a tile with the pattern extending completely through it
125 is to employ a pattern-plate not provided with pockets for receiving the body-forming dust, as last described, but of sufficient thickness—say, for example, one-half or five-eighths of an
130 inch thick—and to proceed in the manner hereinbefore described at the part of this specification commencing "when it is desired to construct a tile" and ending "the indented die-plate is filled with dust to form

the body of the tile." When the body-forming dust is filled into the raised tool-box C, it will completely cover the pattern-producing dust, and after it has been compressed and the tile is, say, half an inch thick, the pattern may extend into the body of the tile to within, say, one-sixteenth of an inch of the entire thickness. By lowering the tool-box C to the required extent and with a suitable blade or tool—such as a wide chisel—removing the superfluous sixteenth of an inch of body-forming dust the pattern will be caused to appear on both sides of the tile, extending entirely through it.

It will be understood that the before-described or other design may be produced in two or more colors or in one color which does not extend throughout the whole design. For example, the indentations *a* may be reproduced in green and the remaining parts of the design may be of the same color as the body, or vice versa, or a design of any other combination of colors of which one may be that of the body may be worked out.

Where the color of the design extends completely through the body of the tile, as in Fig. 10, it will be manifest that by suitably modifying the operative face of the stamper and indenting the face of the press-plunger the tile may be produced with two identically similar faces at one operation, or by working directly on the surface of the anvil B or using a flat or smooth plate A and a flat-faced plunger I can produce a tile which will be flat on both sides and have a pattern the color of which will extend completely through the body of the tile.

Hitherto I have spoken of the die-plate as being indented—that is, having the design sunk into it—and the same of the press-plun-

ger. It will, however, be understood that the whole or a portion of the design upon either the die-plate or press-plunger may be in relief, so as to produce an intaglio or sunk design or part of a design upon the tile or other article.

The above description relating to flat tiles will sufficiently serve to show the application of this invention to other articles which need not be flat, but may be curved or otherwise shaped, as required, the necessary alterations in the apparatus being accordingly made.

I claim—

The herein-described method of producing a tile or other analogous article having a plain ground and an inlaid and colored design provided with a smooth finished face, which consists in forming the colored design by dusting differently-colored powdered or comminuted clays successively and separately into a sectional mold by means of a series of stencil-plates corresponding, respectively, with the outlines of the differently-colored portions of the design, then smoothing and finishing the face of the design by compressing said clays in a dry state or condition by means of a stamper, then forming the plain ground by removing the upper section of the mold and dusting powdered or comminuted body-forming material upon the face of the lower section of the mold and around the design, and then uniting and agglomerating the mass, for the purposes set forth.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

HENRY BAGGALEY.

Witnesses:

W. A. COWLISHAW,
WM. E. PICKERING.