C. CHAMBERS, Jr.

BRICK MOLD.

No. 39,884. Patented Sept. 15, 1863.

Fig. 1

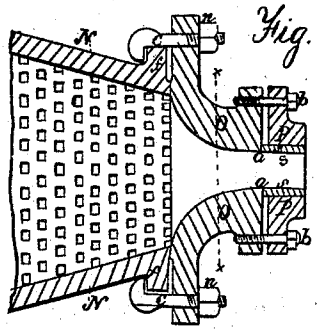


Fig. 2.

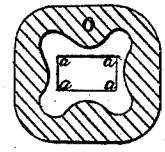


Fig. 3.

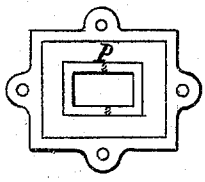


Fig. 4.

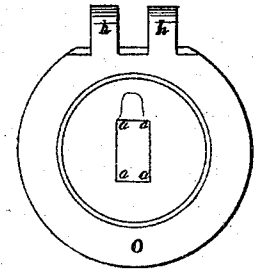
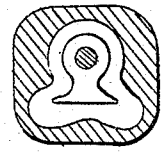


Fig. 5.



Fig. 6.



Witnesses.

D. C. Smith.

Inventor.

Cyrus Chambers Jr

By his attorney

Chas F. Sansbury.

UNITED STATES PATENT OFFICE.

CYRUS CHAMBERS, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN DIES FOR BRICK AND TILE MACHINES.

Specification forming part of Letters Patent No. **39,884**, dated September 15, 1863.

To all whom it may concern:

Be it known that I, CYRUS CHAMBERS, Jr., of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Dies for Brick and Tile Machines; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of my improved dies in their connection with the tempering-chamber of the brick-machine. Fig. 2 is an interior end view of a portion of the dies, the section being on line *x x* of Fig. 1. Fig. 3 is an external end view of the forming-die. Fig. 4 is an interior view of the compressing-die, showing the peculiar configuration of its internal surface. Figs. 5 and 6 are views similar to Fig. 2 of dies intended for the production of tiles of different patterns, illustrating the application of my improved construction of dies for bricks to dies for the manufacture of tiles.

The same letter marks the same part wherever it occurs.

My improvement relates to that class of brick and tile machines in which the clay is forced through a die in a continuous stream, and afterward cut into the proper lengths to form bricks or tiles. For an improved machine of this character I have made application of even date herewith for Letters Patent of the United States, and I use the dies herein described in that machine.

In brick and tile machines of the class just alluded to the means used to propel the clay are the plunger or reciprocating piston, or the double or single spiral flange or screw, working in a chamber of equal diameter throughout. In most, if not all, of them the clay used has been previously carefully pugged in a separate machine, and all foreign substances carefully removed, to avoid danger to the dies and to secure as much as possible that exclusion of air and uniformity of consistence which are essential to the perfection of brick and tile making by this peculiar mode; but even with this precaution, which adds the expense of a double handling to the manufacture, the bricks and tiles are not sufficiently smooth or solid on the corners or angles.

The object of my improved dies is to remedy as far as possible the defect last named in this mode of manufacture, which, but for this defect, would be superior to all other modes, in consequence of its great rapidity and cheapness.

It will be obvious upon reflection that the ordinary operation of a plunger or other propelling device in a machine with the ordinary form of die is to produce the greatest amount of velocity in the center of the mass, giving the outer edges and surfaces less, and hence rendering them more liable to be made ragged and broken by partial adhesion to the die while passing through it. The velocity being less, the density is also less of these outer portions. In other words, the quantity of matter in a given space is greater at the center than at the surface of the exuded bar of clay. The remedy for this is to be sought in a reversal of the ordinary disposition of the material, forcing the greatest amount of clay into the corners of the brick or tile and compressing it there, so that the last action of the die upon it will be to give it smoothness instead of tearing it and rendering it rough and ragged. The peculiar form of my dies completely effects this object.

To enable others skilled in the art to make and use my improved dies, I will proceed to describe their construction and operation, referring to the accompanying drawings, wherein—

N marks the smaller end of the tempering or pugging chamber, whence the clay is driven into and through the compressing and forming dies by any suitable mechanism. There is a flange, *f*, on the outer end of this chamber, to which the compressing-die O is bolted by means of the bolts *c* and nuts *n*. The cross-section of this die is at its inner end circular, and at its outer end rectangular, as seen in Fig. 4. A cross-section on the line *x x* of Fig. 1 is shown in Fig. 2. In this figure we see the angles or corners rounded out or grooved, and these grooves gradually tapering till they disappear altogether at the angles *a a* of the rectangular opening of the die. These grooves constitute the main peculiarity of the invention, their object and effect being to crowd a greater quantity of clay into the angles of the bar of clay as it passes through the die, so as to give them greater solidity and firmness, in accordance with the views hereinbefore stated. To the outer end of the compressing-die is attached a plain rectangular die, P, Figs. 1 and

3, through which the bar of clay passes on its way to the receiving and off-bearing aprons, where it is cut into bricks. The die P has a lining, *s*, of steel, designed to diminish wear, and thus prevent irregularity in the size of the bricks.

It is obvious that the same principle of construction hereinbefore described in its application to dies for making bricks is applicable to the analogous manufacture of tiles, in which the same practical difficulties as to the solidity of the angles equally present themselves, and are to be overcome in the same manner.

Figs. 5 and 6 illustrate clearly the adaptation of the principle to dies for the manufacture of drain-tiles of different forms, the grooves of the dies tapering toward the angles of the delivering-orifice, and thus crowding the clay into the corners of the tiles, rendering them firm and solid. No more detailed description of this modification is required.

Having thus fully described my improvement, what I claim, and desire to secure by Letters Patent, is—

Imparting to the angles of bricks and tiles greater firmness and solidity by forcing a larger quantity of clay into them by means of a die with tapering grooves, constructed and operating substantially in the manner described and shown.

The above specification of my said invention signed and witnessed, at Philadelphia, this 18th day of December, A. D. 1862.

CYRUS CHAMBERS, Jr.

Witnesses:
WILLIAM ASCOUGH,
WILLIAM BLACKBURN.