(Model.) 2 Sheets—Sheet 1.

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BRICK, CONCRETE BLOCK, &c.

No. 338,490. Patented Mar. 23, 1886.

Fig. 1.

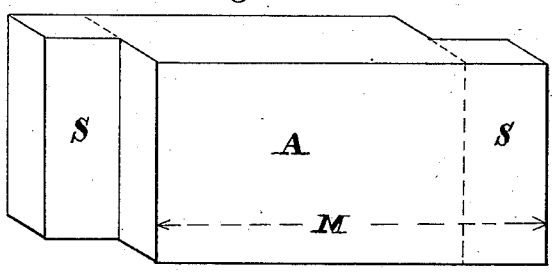


Fig. 2.

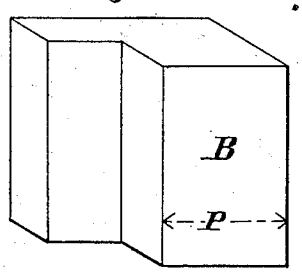


Fig. 3.

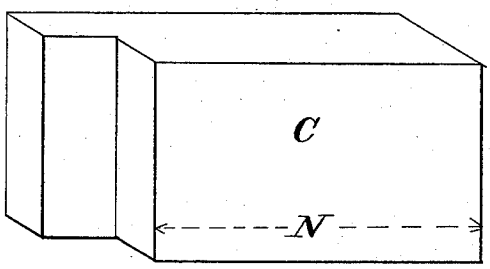


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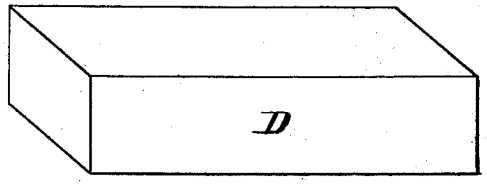


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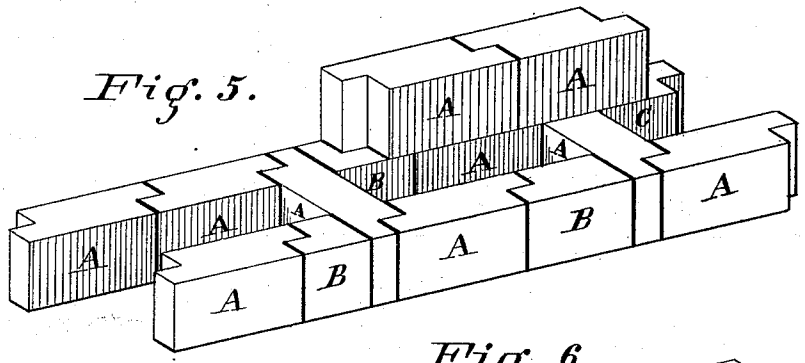


Fig. 6.

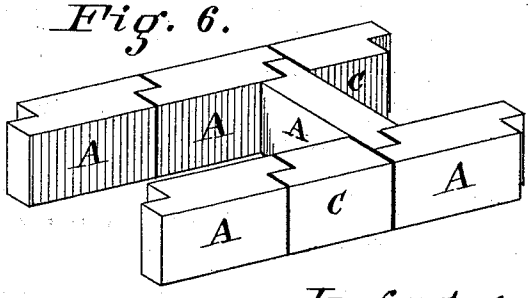
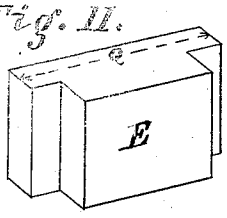


Fig. 11.



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Fig. 7.

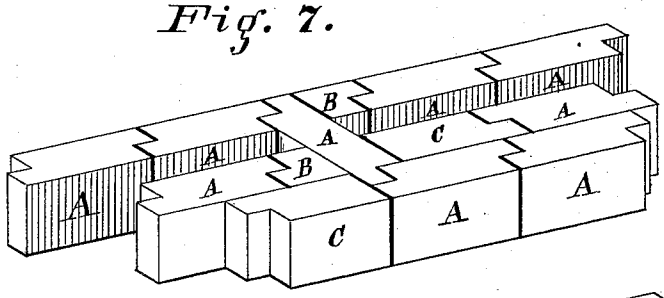


Fig. 8.

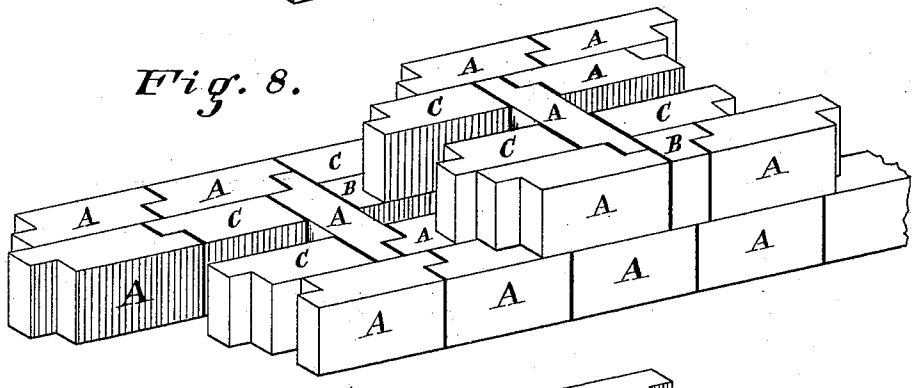


Fig. 9.

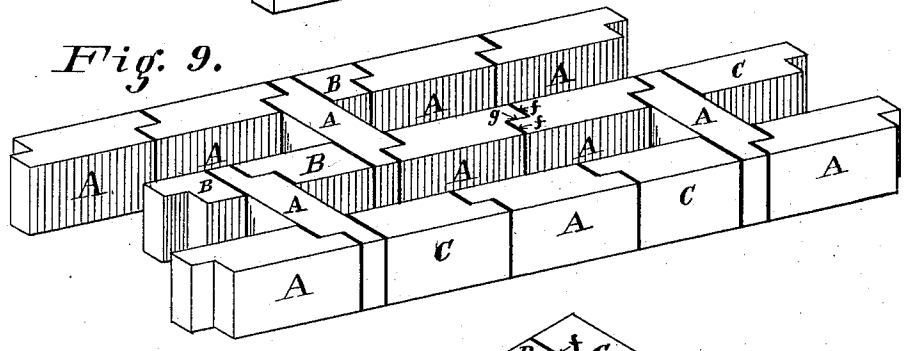
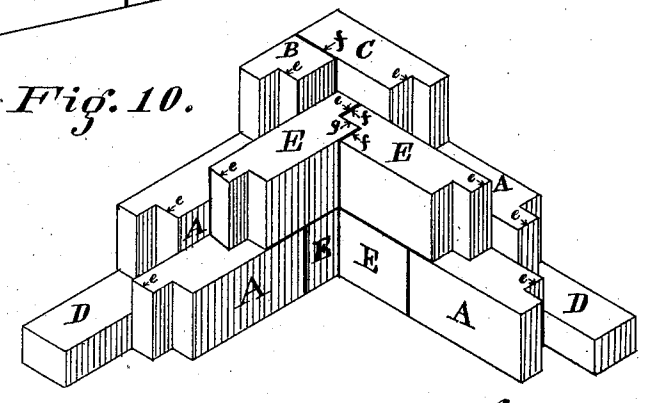


Fig. 10.



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UNITED STATES PATENT OFFICE.

HUGH C. COWAN, OF OXFORD, OHIO.

BRICK, CONCRETE BLOCK, &c.

SPECIFICATION forming part of Letters Patent No. 338,490, dated March 23, 1886.

Application filed March 9, 1885. Serial No. 158,132. (Model.)

To all whom it may concern:

Be it known that I, HUGH C. COWAN, a resident of Oxford, Butler county, Ohio, have invented certain new and useful Improvements in Bricks, Concrete Blocks, &c., of which the following is a specification.

My invention provides a series of bricks, all containing the same general principle, but differing in certain particulars. These bricks enable the building of safer houses and flues than can be obtained with the use of the ordinary rectangular brick now in general use.

Referring to the drawings, Figures 1, 2, 3, 4, and 11, Sheet 1, represent in isometric view the different varieties of brick used in my plan and embodied in my invention, Fig. 11 being shown on a somewhat diminished scale. Figs. 5 and 6 of Sheet 1 and Figs. 7, 8, and 9 of Sheet 2 illustrate, on a diminished scale, different methods of combining these bricks so as to make walls of varying thicknesses and strength, and will be more fully described in the body of the specification. Fig. 10, Sheet 2, illustrates the construction of a fire-proof flue by the use of my bricks.

I use five different forms of bricks, which, excepting the one illustrated in Fig. 4, are the same width and thickness, but vary in their length and in the conformation of their ends. These forms I shall designate throughout this specification as A, illustrated in Fig. 1; B, Fig. 2; C, Fig. 3; D, Fig. 4, and E, Fig. 11.

The brick A may be described as a rectangular parallelopipedon, from each end of which a shoulder, S, also a rectangular parallelopipedon, projects. Each shoulder is half the thickness of the brick in thickness and projects a distance equal to half the thickness of the brick. These shoulders extend entirely across the ends of the brick, and are continuous with opposite faces of the brick. The brick C is the same as brick A in size and shape, except that one of the shoulders S is wanting. The brick B has the shouldered end like brick C, but is shorter in length. The brick E has both shoulders on the same side, and is preferably the same length as brick C. The brick D is a rectangular parallelopipedon, whose width is equal to the thickness of the other bricks, and whose thickness is equal to half their width, or "depth," as it may be termed; while its length is unimportant, it is preferably equal to that of brick C.

The bricks may be of various sizes, and the size of their end recesses and end projections may be varied, respectively or otherwise, to suit the place they are to fill, and the kind of wall or flue in which they are to be used; but the hereinafter-named proportions of bricks, ends, and recesses are deemed the most desirable.

While I do not limit myself to bricks of particular size, it will be convenient in this specification to give dimensions to the various bricks illustrated, dimensions suitable in practice, and which will be understood in the descriptions of the remaining figures. Thus the width of depth of each brick is preferably four inches and its thickness three inches. The thickness being three inches, each shoulder will be one and one-half (1½) inch thick, and project one and one-half (1½) inch from the main body of the brick of which it forms a part. The length M in brick A is preferably eight (8) inches, making the whole brick nine and one-half (9½) inches long. The length P in brick B is two and one-half (2½) inches, and the length N in brick C is six and one-half (6½) inches. The brick D is preferably two inches by three inches by eight inches.

Bearing in mind these dimensions, Fig. 5 represents a nine and one-half (9½) inch wall composed of two planes of brick of pattern A stood on edge and joined or tied at close intervals by bricks A, which project through the wall on both sides and show the ends of the tiers. This leaves a three and one-half (3½) inch hollow space between the two planes of brick. At the tie-joints bricks B and C are used. This hollow wall of nine and one-half inches may be compared to the ordinary eight-inch wall.

Fig. 6 represents a twelve and-one-half-inch wall, made up mainly of bricks of the pattern A, which are arranged as in Fig. 5, except that the hollow space is six and one-half inches instead of three and one-half inches, and the tie-bricks extend through only one-half the

thickness of each plane of wall—an arrangement which the shouldered edge allows. At the tie-joints patterns B and C are used.

In Fig. 7 another form of hollow wall is shown. One of the planes composing this wall, preferably the outer plane, has two layers of bricks. This wall, as shown in Fig. 7, is eleven inches thick, the hollow space is two inches, and the tier-bricks extend entirely through the inner plane and three-fourths through the outer plane, not showing on the outside.

Fig. 8 shows a fourteen-inch wall having a two-inch hollow space, and each plane of the wall double.

Fig. 9 shows a wall made up of three layers, tied as the layers in Fig. 5. Such a wall will be sixteen inches thick and each hollow space will be three and one-half inches.

A very important use of my bricks is illustrated in Fig. 10, which shows their adaptation to the construction of chimney-flues.

"Deflective flues," so called, are often caused by the mortar cracking out between bricks and leaving small spaces, through which fire can find its way to adjacent wood-work. An examination of Fig. 10 will show how a flue may be constructed with my bricks, using forms A, B, C, D, and E, which shall at every point present at least three inches of solid brick—that is, the thickness of one brick—between the inside and outside of the flue, and an inch and a half of mortar, as at *e*, Fig. 10, wherever the wall is continued by additional blocks. The use of the flat brick D is to break the long joints, as here illustrated.

These figures illustrate some of the numerous adaptations of my bricks, which may be generalized into two uses—viz., the building of hollow walls and safety-flues.

As some of the advantages of hollow walls may be mentioned diminished cost through lessened number of bricks without diminishment of strength, the maintenance of a more equal temperature, and greater dryness.

The flue illustrated in Fig. 10 possesses one advantage, a broad one—safety, and it is not encumbered with difficulties and drawbacks.

The preferred manner of placing and applying the mortar to the joints between adjacent ends is illustrated by the light and heavy lines at the junction of the bricks. Thus the heavy lines, as *f*, indicate the presence of mortar between the joints, while the thin lines, as *g*, indicate the absence of mortar.

The reason why mortar is preferably omitted at the line *f* of the meeting edges is because mortar could not readily be placed there so as to be of regular thickness, and when of irregular thickness would cause irregular projections of the ends of the brick.

The special advantages in the use of my shouldered brick may be enumerated as follows: first, the manner of tying the walls together by shouldered brick, forming a much more solid tie or brace than the methods now in use; second, the placing of the brick on the edge instead of the side, increasing the building capacity of the brick; third, the manner of shouldering the brick causes each brick to hold in place its adjacent or joining brick; fourth, the placing of the brick on edge saves about forty-five per cent. of the mortar; fifth, the inside of the wall being almost as smooth as the outside very materially lessens the cost of plastering.

An obvious advantage of my invention consists in the fact that the mortar between parts of the meeting ends of adjacent bricks is locked or shut up into position and cannot escape, even if the said meeting ends become somewhat separated at top or bottom by the canting or leaning of said brick. For illustration, the mortar at the end portion, *e*, in the corner of the middle inner tier of bricks in the flue shown in Fig. 10 is thus securely held, and where the sides of the flue are continued, as will, of course, ordinarily be the case, the mortar at the ends *e* of each block will be securely held in place.

My invention, though primarily intended to be applied to constructions of bricks, may be usefully applied to blocks of stone, concrete, or molded clay, hardened sands or earths.

While the various features of my invention are preferably employed together, one or more of said features may be employed without the remainder.

In so far as applicable, one or more of said features may be used in connection with walls, flues, &c., other than those hereinbefore specifically described.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. Bricks molded or stone blocks having opposite alternating shoulders, as form A, the extension S being in thickness equal to one-half the thickness of the block, and the shoulder having a depth equal to one-half the thickness of the block, substantially as and for the purposes specified.

2. Bricks molded or stone blocks having opposite alternating extensions and shoulders, the extensions and shoulders extending across the entire block from edge to edge of the latter, substantially as and for the purposes specified.

3. Bricks molded or stone blocks having opposite alternating shoulders, as form A, the extension S being equal to one-half the thickness of the block, and the shoulder having a depth equal to one-half the thickness of the block, the extension and the shoulder extending across the entire block from edge to edge, substantially as and for the purposes specified.

4. Bricks molded or stone blocks having opposite alternating extensions and shoulders, the central body of the block being of the thickness of the two extensions, and the shoulders or extensions extending across the entire width of the block, every portion of the

side of the block being in one plane, and every portion of the edge of the block being in one plane, substantially as and for the purposes specified.

5. Bricks molded or stone blocks having a shoulder or shoulders, the extension being equal to one-half the thickness of the block, and the shoulder having a depth equal to one-half the thickness of the block, the extension and shoulder extending across the entire block from edge to edge, substantially as and for the purposes specified.

HUGH C. COWAN.

Witnesses:
JNO. W. STREHLI,
O. M. HILL.