No. 627,849. Patented June 27, 1899.

E. M. HACKETT.

ARCHITRAVE, ARCH, AND LINTEL.

(Application filed Apr. 22, 1898.)

(No Model.) 2 Sheets—Sheet 1.

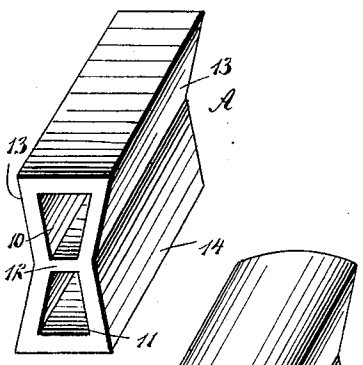


Fig. 1

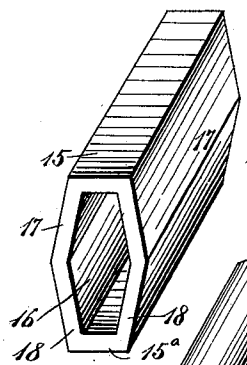


Fig. 2

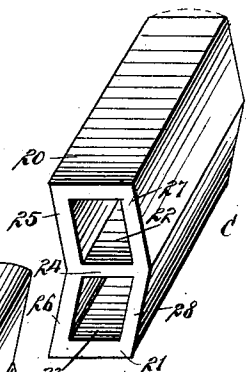


Fig. 3

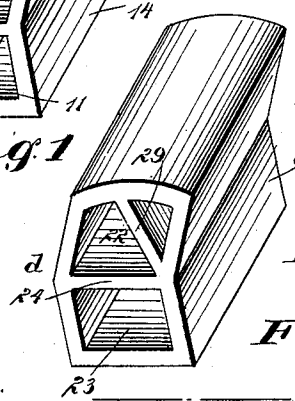


Fig. 4

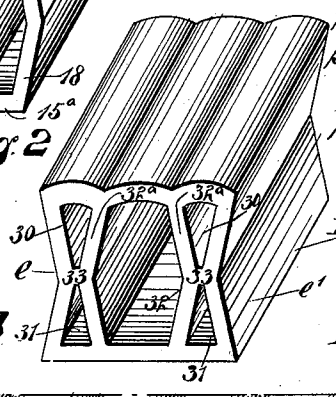


Fig. 5

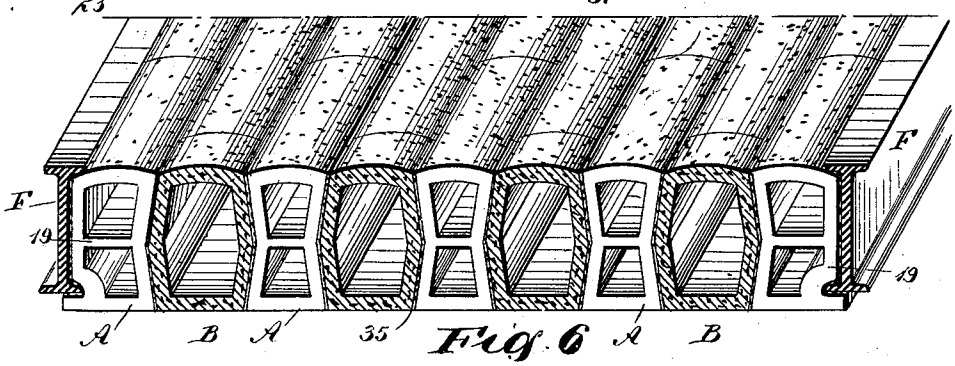


Fig. 6

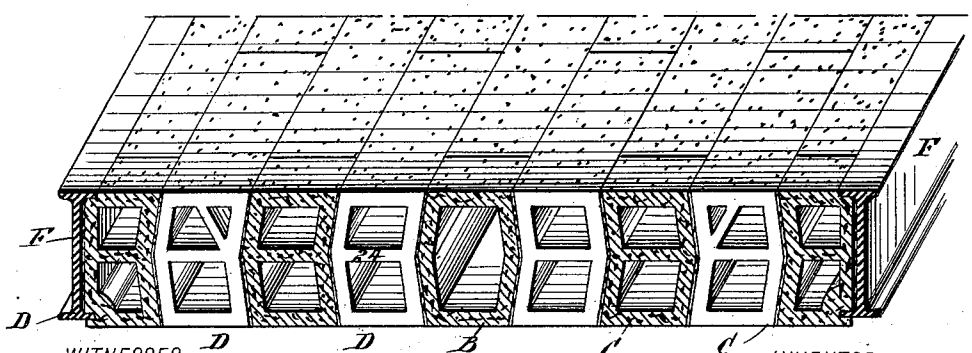


Fig. 7

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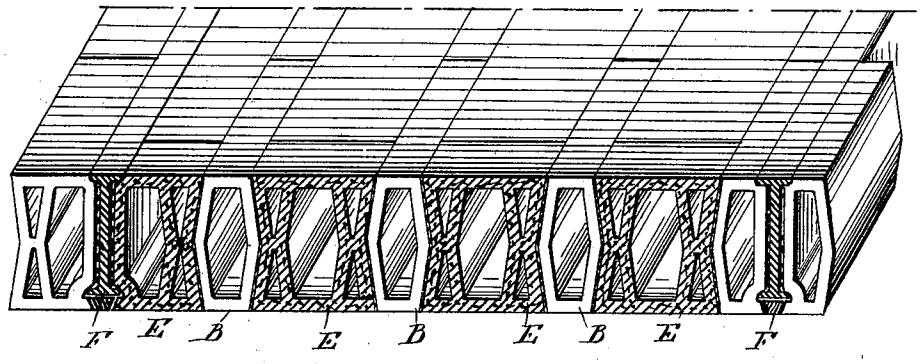


Fig. 8

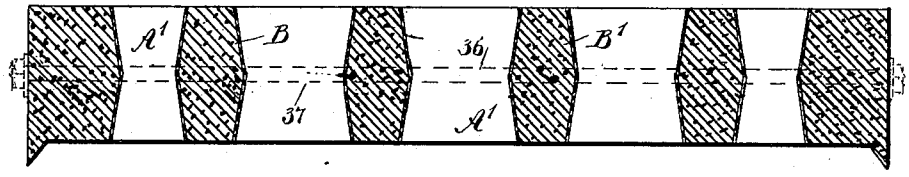
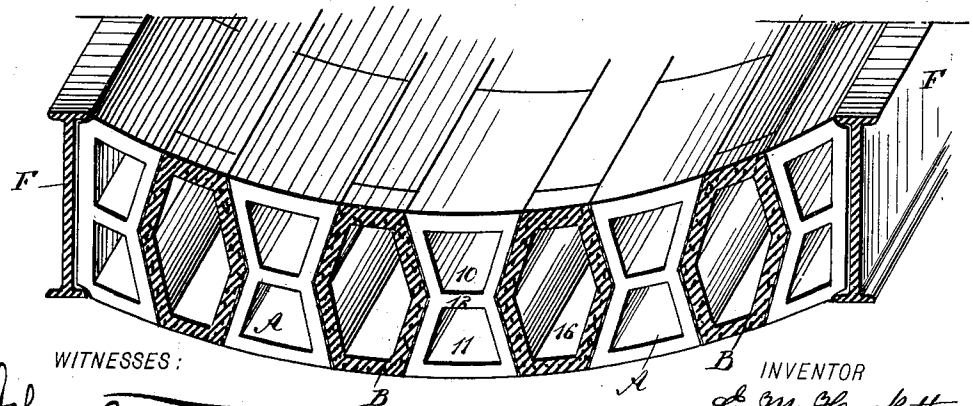


Fig. 9



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Fig. 10

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UNITED STATES PATENT OFFICE.

EDWARD M. HACKETT, OF NEW YORK, N. Y.

ARCHITRAVE, ARCH, AND LINTEL.

SPECIFICATION forming part of Letters Patent No. 627,849, dated June 27, 1899.

Application filed April 22, 1898. Serial No. 678,468. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. HACKETT, of the city of New York, borough of Manhattan, in the county of New York and State of New York, have invented a new and useful Improvement in Architraves, Arches, and Lintels, of which the following is a full, clear, and exact description.

My invention relates to an improvement in means for forming architraves, arches, and lintels for buildings, bridges, and other structures; but the invention relates particularly to architraves between iron beams in fireproof buildings.

The object of the invention is to provide blocks, which may be made of terra-cotta or any approved material, so constructed that when combined between beams or other supports they will have a dovetail or interlocking connection to such an extent as to enable a straight structure to be erected between the beams or other supports, one side of which may serve as a floor and the opposite side as a ceiling, the blocks or members of the structure being so tied together as to impart to the said straight and architrave structure all the strength and characteristics of the well-known arch.

A further object of the invention is to provide for the utilization of hollow or of chambered blocks and to construct the individual blocks in a most simple yet economic and durable manner.

Another object of the invention is to provide for the construction of an inverted arch in as expeditious and durable a manner as the ordinary or erect arch.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figures 1, 2, 3, 4, and 5 are perspective views of the different forms of blocks that may be employed in carrying out the invention. Fig. 6 is a perspective view of an architrave between beams constructed of the blocks shown in Figs. 1 and 2. Fig. 7 is a view similar to Fig. 6, illustrating an architrave structure in which the blocks shown in Figs. 2, 3, and 4 are employed. Fig. 8 is a view similar to Figs. 6 and 7, in which the blocks shown in Figs. 2 and 5 are used. Fig. 9 is a vertical section through a lintel, in which the blocks are solid and substantially of the exterior shape illustrated in Figs. 1 and 2; and Fig. 10 is a perspective sectional view of an inverted arch constructed from the form of blocks illustrated in Figs. 1 and 2.

Under the construction of the block A (shown in Fig. 1) the ends are given the formation of connected dovetail sections. The block is usually made hollow, being provided with an upper longitudinal chamber 10 and a lower longitudinal chamber 11, separated by a central longitudinal partition 12. The upper portion 13 of the two side faces of the block A convergingly taper from the top to the center line or to the partition 12, while the lower portions 14 of the two sides divergingly taper from the longitudinal center line of the block to the bottom side line, whereby at each side of the block an angular depressed or dovetail face is produced.

The block B, (shown in Fig. 2,) which is essentially used as a tie-block, is practically lozenge shape in cross-section; but the top 15 and the bottom 15^a are either flat, concaved, or convexed, as occasion may demand or fancy dictate. This block is provided with a single central chamber extending through from end to end. The upper portions 17 of the sides diverge from the top in direction of the center, and the lower side faces 18 are inclined from the center inwardly to the bottom.

The block C (shown in Fig. 3) is practically the same as the block D, (shown in Fig. 4,) one block being right-hand, the other being left-hand. In the form of block C the upper portion 25 of the left-hand face is beveled or inclined from the top inwardly to a central longitudinal line, and the lower portion 26 of the left-hand face is beveled outwardly and downwardly from the center line to the bottom line of the block, the inclination being just the reverse of the upper face, and the upper portion 27 of the right-hand face of the block is parallel with the corresponding left-hand surface 25, as is likewise the lower left-hand surface 26. This block is preferably provided with two longitudinal chambers—an

upper one 22 and a lower one 23, divided by a central partition 24. The block D (shown in Fig. 4) is shaped the reverse of the block C, the right-hand surface being angularly concaved and the left-hand surface angularly convexed; but in addition the block D is provided with a strengthening diagonal partition 29 in its upper chamber 22 and is shown also of greater width than the block C. The block C is also shown with a flattened upper face, whereas the upper face of the block D is convexed.

The block E (shown in Fig. 5) combines the shape of the blocks A and B, the shape of the blocks A being the shape of the outer portions of the block E, while the central portion of the block E is correspondingly shaped to the block B. In the detail construction of the block E at each side an upper and a lower longitudinal chamber are formed, (designated, respectively, as 30 and 31.) The outer side surfaces *e* and *e'* of the block E are angularly concaved, the concavity being inward, and a central substantially lozenge-shaped chamber 32 is formed by providing angular partitions 32^a, the inner faces of which have their angular inclination in an outward direction, and the partitions 32^a are connected with the outer walls of the block E by transverse partitions 33, which separate the upper and lower side chambers 30 and 31. The upper face of the block E may be flat or dome-shaped, but in the drawings it is shown as corrugated.

In Fig. 6 I have illustrated an architrave formed by the combination of the blocks A and B, these blocks being alternately arranged, having interlocking or dovetail connection; but the outer walls of the end blocks, as shown at 19, are made to conform in shape to the side contour of the beams F or other supports between which they are laid. When any of the blocks are laid together, they will have an interlocking or dovetail connection, and the spaces between the blocks, if any exist, are provided with a filling 35 of cement or some form of grout.

In Fig. 7 I have illustrated the right and left hand blocks C and D combined with a central block B, serving as a key, and the grout is likewise placed between adjoining blocks, and the end blocks are made to conform at their outer sides to the formation of the beams F.

In Fig. 8 I have illustrated the double form of block E as used alternately with the form of block B. It is evident that when a block is constructed as shown in Fig. 5 it is doubly strong and will resist any crushing lateral strain to which it may be subjected and that when it is tied in with any of the other blocks adapted to fit it the vertical strain will be resisted as strongly as the lateral strain.

In Fig. 9 I have illustrated the form of blocks A and B (shown in Figs. 1 and 2) as solid, and these blocks are designated as A' and B', the blocks in addition to their interlocking connection being shown as held in place by locating a tie rod or clamp 36 at the back of the blocks. The solid form of blocks shown in Fig. 9 is particularly adapted for use over vaults, and more especially for lintels over doors and windows, and are intended as a substitute for arches, and these blocks may be assembled and secured together before being placed in position.

In Fig. 10 I have shown the form of blocks A and B having their angular faces so modified that when the blocks are alternately arranged in close engagement they form an inverted arch, which arch after being formed will be as strong in every particular as an ordinary or erect arch. This form of the blocks may also be employed in the construction of an erect arch. I desire it to be understood that not only can the angularity of the sides of the blocks be changed, but the side surfaces of the blocks may be given a curved instead of an angular shape.

When the blocks are laid and the last course is reached, the blocks preferably used in this course are made in two sections, the division being at the center, and the two sections are connected by bolts or their equivalents. It may here be stated that the ordinary way of laying blocks of stone tiles or brick to form architraves or arches is from above, but the improved blocks must be laid horizontally, since each block is a key in itself, both from above and from below, and cannot be laid either from the top or from the bottom of the proposed structure, but must be inserted horizontally and alternately, and the ends of the blocks should be cemented.

One of the advantages of the improved form of blocks is that the iron beams between which they are laid can be set farther apart than ordinary, as the architraves formed by the improved blocks will be so much stronger than the present arches now in use. Arches or lintels constructed from the improved blocks are so much stronger than similar structures made from the ordinary blocks that the only way to compute the strength of the improved blocks is to ascertain how much pressure would be required to pull the tie-rods in the lintels apart or how much pressure would be required to force the beams or side walls of the building apart.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In the construction of architraves, arches and lintels, a block provided with an upper and a lower chamber at its sides, and a central chamber having angular side walls, the said block having angular outer side faces, substantially as described.

2. In the construction of architraves, arches, and lintels, a block having an upper and a lower face and provided at each side with an upper and a lower longitudinal chamber, the outer side surfaces of the block being angularly concaved, the concavity being inward, the said block being further provided with

angular partitions, the inner faces of which have their angular inclination in an outward direction, whereby a central substantially lozenge-shaped chamber is formed, the said partitions being connected with the outer side walls of the block by transverse partitions separating the said upper and lower side chambers, substantially as set forth.

3. In the construction of architraves, arches and lintels, the combination with a series of blocks each provided with an upper and a lower chamber at its sides, and a central chamber having angular side walls, the said blocks having angular outer side faces, of key-blocks each having angular side faces, substantially as described.

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