W. P. FRANCIS.

MASONRY BEAM.

APPLICATION FILED MAY 11, 1916.

1,227,418.

Patented May 22, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

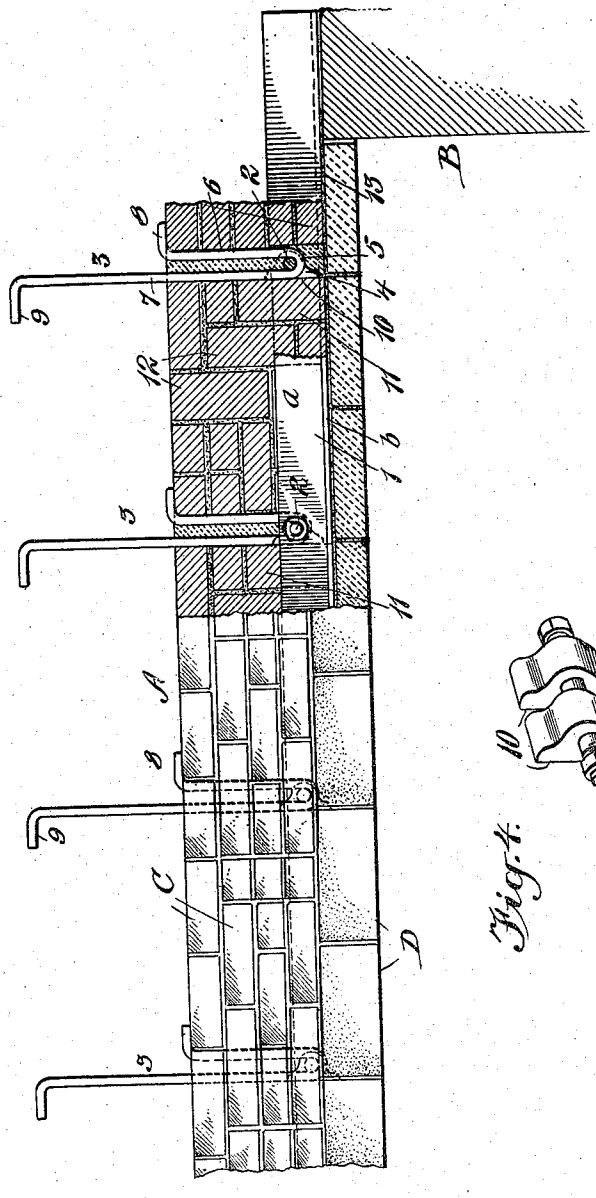


Fig. 4.

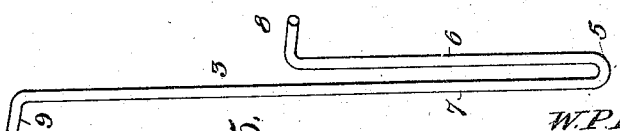


Fig. 5.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

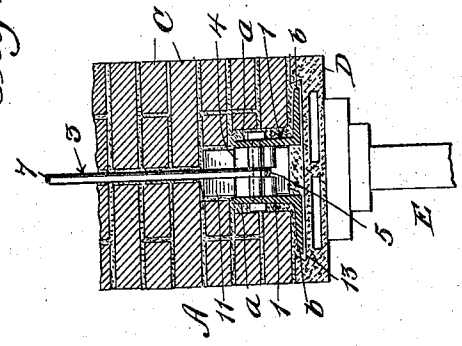
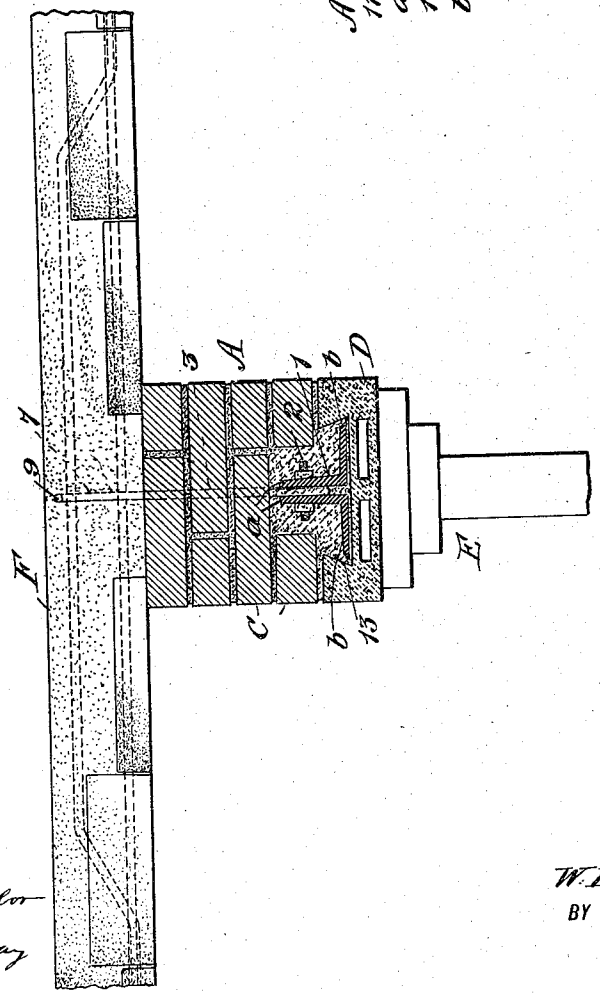


Fig. 3.



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MASONRY BEAM.

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Application filed May 11, 1916. Serial No. 96,814.

To all whom it may concern:

Be it known that I, WILLIAM P. FRANCIS, a citizen of the United States, and a resident of Atlanta, in the county of Fulton and State of Georgia, have invented a new and Improved Masonry Beam, of which the following is a full, clear, and exact description.

This invention relates to masonry beams of the metal reinforced type, and the invention has for its general object to improve the construction whereby the tiles on the bottom of the beam are more firmly anchored, and whereby the beam is materially strengthened compared with prior structures.

A more specific object of the invention is the provision of a masonry beam having a reinforce composed of a novel arrangement of angle-irons and stirrups with or without bearing blocks at the point of connection of the stirrups with the angle-irons, the arrangement and design of the parts being such that shearing strains are effectively overcome.

Still another object is to provide a novel form of tile and means for anchoring the same on the bottom of the beam so that the beam can be constructed expeditiously, economically and with a minimum of labor.

With such objects in view, and others which will appear as the description proceeds, the invention comprises various novel features of construction and arrangement of parts which will be set forth with particularity in the following description and claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention and wherein similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a fragmentary side view of a beam with a portion in vertical section;

Fig. 2 is a transverse section of the beam in the plane of one of the stirrups;

Fig. 3 is a sectional view of a modified form of beam;

Fig. 4 is a perspective view of a pair of bearing blocks forming part of the reinforce; and

Fig. 5 is a perspective view of one of the stirrups.

Referring to the drawing, A designates a beam which is supported at its ends on columns, piers or other supports B, and which is adapted to support a masonry floor of any suitable construction. The masonry work is shown as consisting of courses of brick C and cellular tile D which form a facing for the bottom of the beam. Embedded in the masonry work of the beam is a reinforcing structure consisting of horizontal angle-irons 1, bolts or pins 2, stirrups 3 fastened by the bolts to the angle-irons, and bearing washers 4. The angle-irons are of such length as to extend from one column or support to the other, and the two angle-irons are placed back to back; that is to say, with the webs or flanges *a* vertical and the flanges *b* horizontal, and extending in opposite directions in the same plane. The bolts 2 pass through the flanges *a* and the lower ends of the stirrups 3 are disposed between such flanges. The bearing blocks are supported on the bolts 2 and are interposed between the stirrup 3 and the flanges *a*, and the horizontal flanges *b* form a supporting surface for the bricks which are laid on the reinforce in courses.

The stirrups are U-shaped bars having their bends 5 at the bottom and engaging under the bolts 2, and from the bend each stirrup is formed with parallel members 6 and 7, the former of which is about one-half the total length of the stirrup, and both members 6 and 7 have their upper extremities bent laterally in opposite directions into lugs 8 and 9, respectively. These stirrups are located in the middle of the beam and extend vertically out of the same and into the floor structure, to thereby form a strong anchoring connection between the beam and floor. The shearing strain decreases upwardly from the bottom of the reinforce, and therefore the stirrups are double only part way of their length, since the shearing strain at the top of the supports is less than at lower points. Each bearing block or washer 4 has upward and downward wings or extensions in a common plane forming a vertical flat surface 10 facing away from the support B toward the middle of the beam, and when assembled on the bolts the flat faces of the bearing blocks are in the same plane with the outer edge of the long members 7 of the stirrups. A paving brick 11 is laid vertically between the angle-irons and against the bearing blocks or washers 4 and members 7 and adjacent this brick 11 other bricks 12 are set in the same

manner in stepped relation. By this construction maximum strength is secured to resist the line of shear, which is greatest at the top edge of the angle-irons. The bricks other than those numbered 11 and 12 are laid in horizontal courses in the usual manner. The bricks, stirrups and bearing blocks are tightly bonded together by mortar, as clearly shown in Fig. 1.

The tiles D are constructed with a dove-tailed recess or groove 13 in the top surface, the recess being of greater width than the dimension from the outer edge of one angle-iron to the outer edge of the other, so that the bottom portions of the angle-irons will lie in the recesses of the tiles. These recesses are then filled with mortar or cement so that when this material sets it will form a dove-tail filling the recesses 13, to thereby anchor the tiles on the reinforce. This forms a simple, convenient and expeditious method of bonding the tiles. It will be understood that in constructing the beam a temporary support E will be employed, as shown in Fig. 3, and a row of tiles D is laid on the support from one column B to the other. The angle-irons are then placed in position, with the horizontal flanges disposed in the recess of the tiles, and after the bearing blocks and stirrups are bolted to the angle-iron, the bricks are laid course after course on the tiles, and after the mortar or cement has thoroughly hardened the temporary support E is removed.

In Fig. 3 a construction is shown in which the bearing blocks are dispensed with, and this figure also shows the manner in which the upper ends of the stirrups lie within the floor structure F.

From the foregoing description taken in connection with the accompanying drawing, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with the structure which I now consider to be the best embodiment thereof, I desire to have it understood that the structure shown is merely illustrative and that such changes may be made when desired as fall within the scope of the appended claims.

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

1. In a beam, a metal reinforce comprising longitudinal angle irons laterally spaced apart, stirrups disposed between the angle irons and extending upwardly therefrom, washers interposed between both sides of the stirrups and the angle irons, and said washers having extensions engaging with the stirrups to firmly support the same upright, and bolts passing through the angle irons and through the washers and stirrups.

2. In a beam, a metal reinforce comprising a pair of angle irons spaced apart, bolts passing through the angle irons, stirrups formed of doubled rods, the doubled extremities being lowermost and disposed between the angle irons and engaged under the bolts, and washers interposed between the stirrups and angle irons and fastened in place by the bolts, said washers having upper and lower extensions arranged in a common plane to provide flat faces, said washers being positioned with the said flat faces vertical and flush with the stirrups at one side.

3. In a beam, a metal reinforce comprising a pair of angle irons spaced apart, bolts passing through the angle irons, stirrups formed of doubled rods, the doubled extremities being lowermost and disposed between the angle irons and engaged under the bolts, washers interposed between the stirrups and angle irons and fastened in place by the bolts, said washers having upper and lower extensions arranged in a common plane to provide flat faces, said washers being positioned with the said flat faces vertical and flush with the stirrups at one side, and masonry work built on the angle irons and around the stirrups and washers.

WILLIAM PINCKNEY FRANCIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."