Oct. 29, 1935. H. J. HINCKE 2,019,133

REENFORCED BRICK BUILDING CONSTRUCTION

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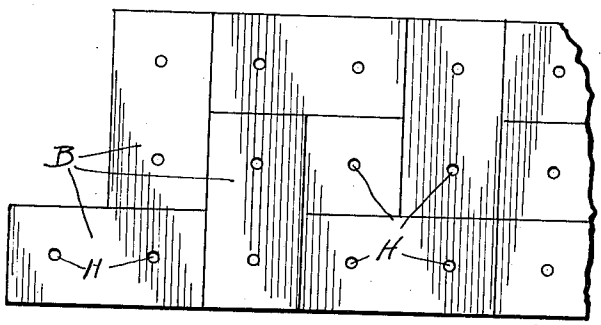

Fig. 1

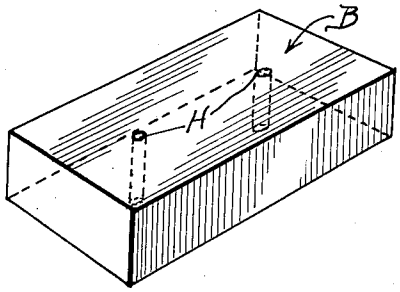

Fig. 2

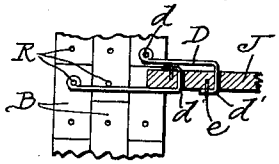

Fig. 7

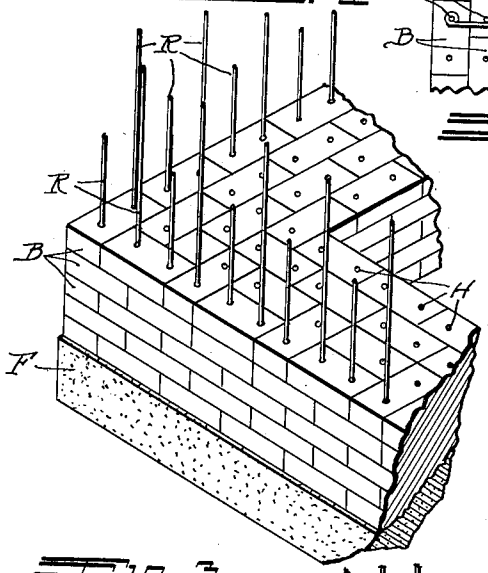

Fig. 3

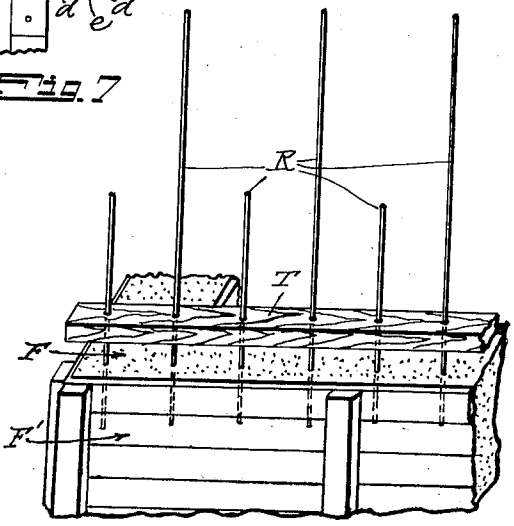

Fig. 5

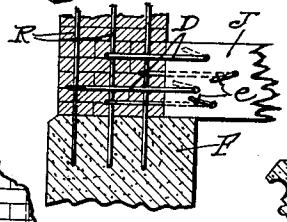

Fig. 8

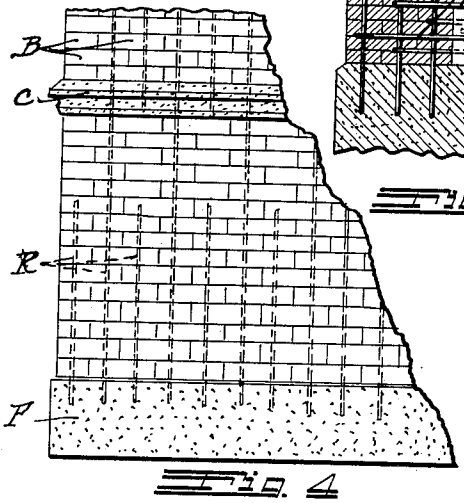

Fig. 4

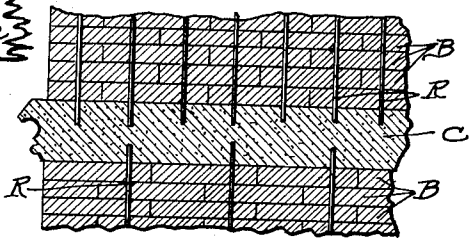

Fig. 6

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REENFORCED BRICK BUILDING CONSTRUCTION

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Application May 27, 1933, Serial No. 673,232

1 Claim. (Cl. 72—40)

This invention relates to and has for a primary object the provision of a reenforced brick building construction, particularly adapted to strengthen and insure brick building walls against damage by shock from earthquakes or other causes.

The invention contemplates the employment of brick of the usual size and form except that each brick of the structure is provided with a pair of perforations longitudinally alined midway of the sides of the brick and spaced apart to correspond substantially to the width of the brick, together with reenforcing metal rods of different lengths embedded at their lower ends in the concrete foundation and extended upwardly thru the perforations in the successive courses of brick.

Another object is to provide metal ties secured to the reenforcing rods between several courses of the brick and permanently fastened at their inner ends to joists or beams whereby the frame work of a building may be rigidly and permanently tied to the brick walls thereof.

In the consideration of this invention it may be understood that the provision of a pair of apertures in each brick of a structure is so arranged that the apertures of one brick will overlie and register with the apertures of adjacent bricks in upper and lower courses regardless of the disposition of the bricks longitudinally or transversely of a wall. Thus when the vertical reenforcing rods are embedded at their lower ends in a concrete foundation for a wall structure and are properly spaced apart to correspond to the spacing of the perforations in the bricks, the bricks of each successive course may be threaded on the upstanding rods and laid as usual upon a bed of mortar. At suitable intervals in each course, or in certain courses, some or all of the bricks in a course may be laid transversely instead of longitudinally for bonding the adjacent tiers of brick in a wall together.

Also, by the employment of reenforced concrete beams on a wall structure at desired elevations, the vertical reenforcing rods may be embedded in such beams when the beams are molded, thereby providing a substantially unitary wall structure with two or more tiers of brick in which the tiers are positively tied together at frequent intervals, and the bricks of each course are similarly tied so as to prevent separation of the tiers and separation of the bricks in a course.

Other objects may appear as the description progresses.

In the accompanying drawing I have shown a preferred form of structure in which,

Fig. 1 is an enlarged fragmentary plan showing a course of bricks in a wall structure with the brick laid transversely and longitudinally in a plurality of rows for bonding the rows together, and also for tying the bricks in each course against separation, as by means of shocks or earthquakes.

Fig. 2 is a perspective view of a brick showing a pair of apertures therein for receiving the reenforcing rods.

Fig. 3 is a fragmentary perspective view of a brick wall structure embodying my improvements.

Fig. 4 is a fragmentary exterior elevation of a brick wall embodying my improvements and supported on a reenforced concrete foundation with a reenforced concrete beam arranged longitudinally in the wall and anchored to the brick.

Fig. 5 is a perspective view showing a fragment of a concrete foundation in a plastic state within wooden forms and a template superposed thereon by means of which the reenforcing rods for the brick wall structure may be embedded at their lower ends in the unset concrete foundation preparatory to laying the brick wall thereon.

Fig. 6 is a fragmentary sectional elevation of a brick wall structure showing the method of anchoring the brick to a molded concrete beam in a wall.

Figs. 7 and 8 are, respectively, a fragmentary plan and a fragmentary sectional elevation of a wall structure showing the method of anchoring floor joists and other framing members of a structure to a wall.

The invention contemplates primarily the utilization of brick of standard commercial size and quality which, however, differ from brick now in use only in that each brick B when molded is provided with a pair of longitudinally spaced perforations H, as shown in Fig. 2. Said perforations are alined on the longitudinal axis of the brick and are spaced apart for a distance to correspond substantially to the width of the brick. The perforations are positioned inwardly from the ends of the brick at distances equal to one-half the width of the brick. Thus each of the perforations H is positioned at an equal distance from the adjacent end and the two sides of the brick so that, as shown in Fig. 1, when the bricks are laid longitudinally or transversely in a wall all of the perforations H will be both longitudinally

and transversely alined. The perforations H are adapted to be threaded onto vertically disposed reenforcing rods R, R etc., but are preferably of substantially larger area than the rod. Thus the bricks may be readily positioned on the rods and may be laid with their outer edges flush, as shown in Figs. 3 and 4, by tapping the bricks as in other types of brick wall structures.

The clearance of the rods R in the perforations H should be sufficient to permit the alinement of the bricks in a course, and particularly on the outer or inner face of the wall.

As shown in Fig. 5, when the concrete foundation F is poured into the forms F', a template T of wood or metal may be laid upon the top of the foundation and rods R, R may be projected downwardly thru perforations in the template T so that their lower ends will be embedded and firmly anchored in the concrete of the foundation before it has set. In this connection, it is apparent that the spacing and arrangement of the perforations in the template T should correspond to the spacing and arrangement of the perforations H in the bricks of the wall structure.

Preferably the rods R, R, as shown in Figs. 3 and 5, are of varying length and are arranged with longitudinal and short rods alternating in a given longitudinal line in the position of each row of a wall. With the lowermost set of rods R anchored in the foundation F when the foundation is set and in readiness to receive the brick wall structure the top of the foundation is as usual coated with a bed of mortar upon which the lowermost course of bricks B is laid, said bricks being threaded onto the rods R in the process of laying. As successive courses are laid they are likewise provided with a coating of mortar to receive the course of brick next uppermost.

Pressure is applied to each course, as is usual in the laying of brick walls and the outermost bricks of each course are alined by a suitable tool for providing flush outer and inner faces.

As previously described, the size of the apertures H permits the adjustment of the bricks individually to a position of alinement with adjacent bricks in the wall, and the mortar bed beneath each course of brick necessarily enters the upper and lower extremities of the apertures H so as to fill the clearance spaces in said apertures around the rods R.

The longest of the rods R, for convenience in laying the brick, should not exceed three feet.

When a course of brick has been laid to a point flush with or above the upper extremities of any of the rods R, new rods are inserted in the corresponding apertures of the bricks which form extensions. Thus at no point in the elevation of the wall structure can any of the bricks therein be disconnected from the other bricks in its course, and no course is disconnected at any point from an adjacent course.

As shown in Fig. 6, at frequent intervals in a wall a reenforced concrete beam C may be molded in the wall and extended longitudinally thereof, and in such case the upper ends of the rods R which reenforce the brick below the beam are extended upwardly into and are anchored in the concrete beam. In like manner the brick courses, laid upon said beam when it is set are anchored to the beam by reason of the fact that the lower ends of the reenforcing rods R in the super-structure are also anchored in the concrete beam as in the case of the foundation F and by a similar method and means. Thus the beam C is positively and permanently anchored to the sub-structure and the super-structure of a wall associated therewith.

At any elevation on the structure, as for instance at the foundation line, as shown in Fig. 8, or at the level of a second or third story, or at the roof line, joists or beams J may be securely anchored to the wall structure by means of metal anchors D which may be of varying length and provided with loops *d* adapted to be threaded onto the vertical rods R in some or all of the courses of a wall and between several courses so that their inner extended ends *d'* may be bent thru suitable perforations in the members J and thence over the opposite sides of said members and stapled or otherwise secured at *e* to the members J. Preferably, as shown in Fig. 8, each of the members J will be tied or anchored to the wall at a plurality of points so as to firmly tie the frame of the building to the wall.

It will be apparent that the structure shown and described herein is not a radical departure from the standard building practice, but provides in a brick structure substantially the same rigidity as in a reenforced concrete structure, thereby eliminating the possibility of serious fractures in the structure due to earthquake shocks or other causes.

What I claim is:

A reenforced brick structure comprising in combination a cementitious foundation, a plurality of vertically disposed reenforcing rods having their lower ends embedded and anchored in said foundation, a plurality of rows and courses of brick superposed on said foundation to form a wall, the brick in each of said courses being provided with perforations correspondingly spaced to receive said rods, and a molded cementitious beam interposed between certain courses of said brick and having the upper ends of certain of the reenforcing rods and the lower ends of the other of said rods anchored therein.

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