June 12, 1934. H. G. MACWILLIAM 1,962,514

BUILDING CONSTRUCTION

Filed April 25, 1933 2 Sheets-Sheet 1

Fig. 1

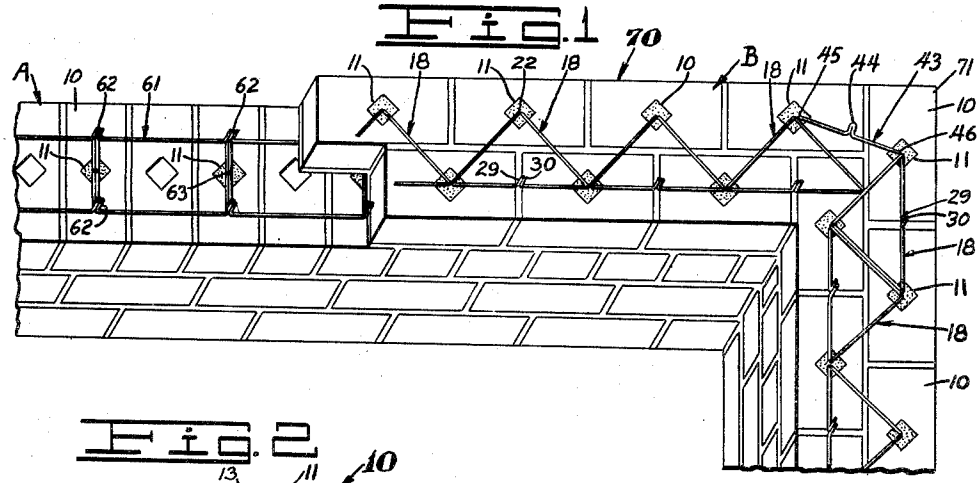


Fig. 2

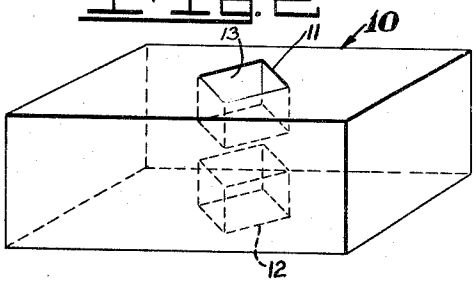


Fig. 3

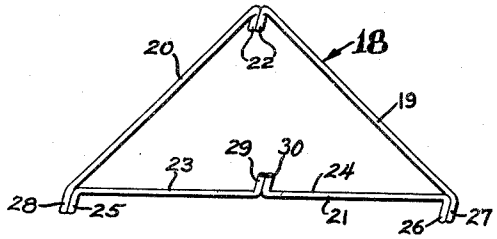


Fig. 4

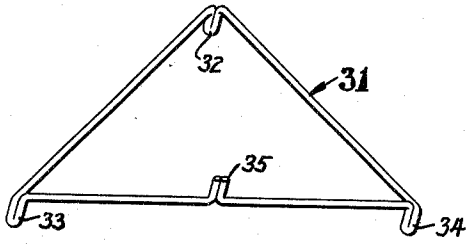


Fig. 5

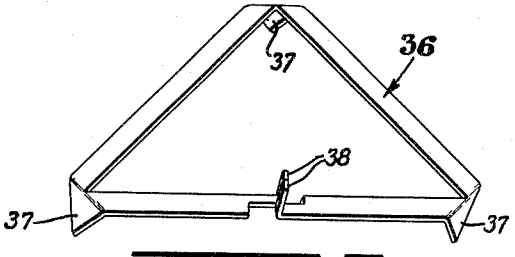


Fig. 6

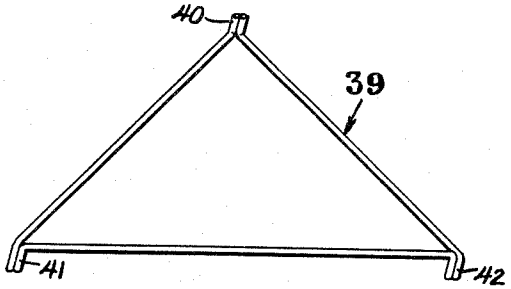
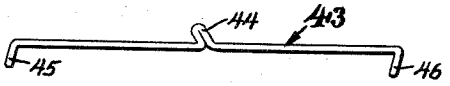


Fig. 7



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BUILDING CONSTRUCTION

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Fig. 8

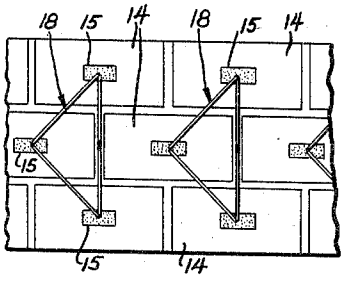


Fig. 10

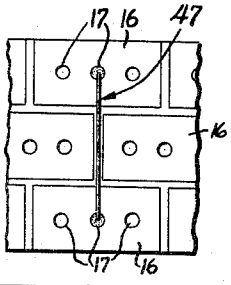


Fig. 11

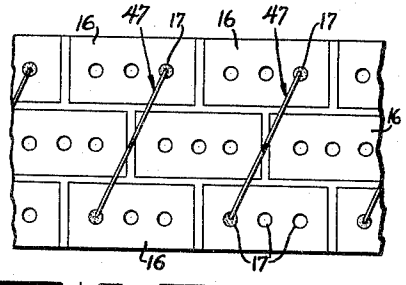


Fig. 9

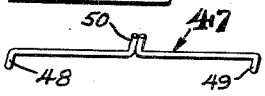


Fig. 13

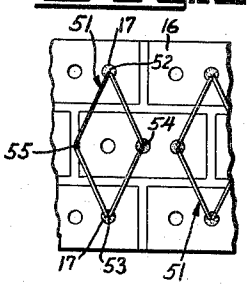


Fig. 15

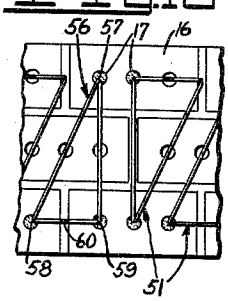


Fig. 17

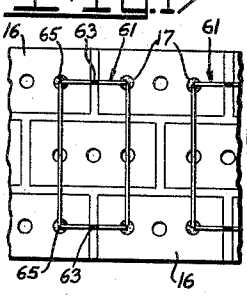


Fig. 12

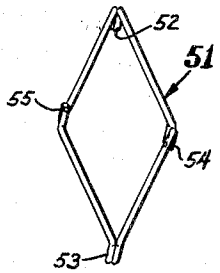


Fig. 14

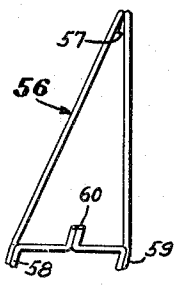


Fig. 16

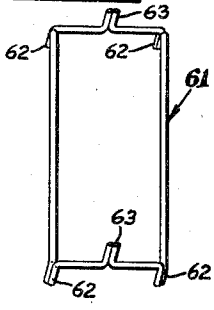


Fig. 18

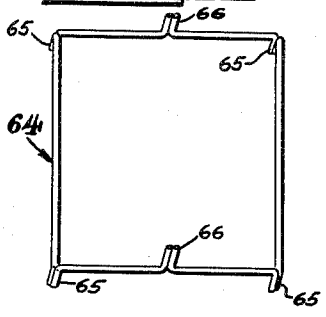


Fig. 19

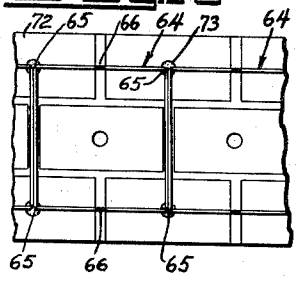


Fig. 21

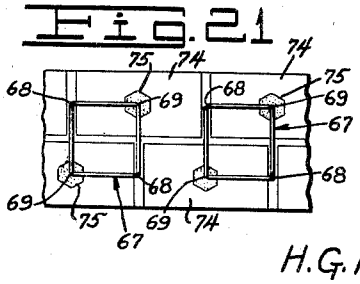
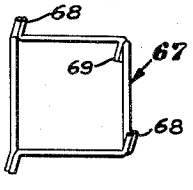


Fig. 20



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Patented June 12, 1934

1,962,514

UNITED STATES PATENT OFFICE

1,962,514

BUILDING CONSTRUCTION

Hugh G. Macwilliam, Hollywood, Calif.

Application April 25, 1933, Serial No. 667,805

6 Claims. (Cl. 72—103)

This invention relates to a building construction.

The general object of the invention is to provide an improved brick construction wherein brick are reinforced and interlocked in a novel manner.

Another object is to provide a novel interlocking frame for brick.

A further object is to provide a novel brick.

Other objects of the invention will be apparent from the accompanying drawings wherein:

Fig. 1 is a fragmentary perspective view looking down on a wall embodying the features of my invention;

Fig. 2 is a perspective view of a brick embodying the features of my invention;

Fig. 3 is a perspective view of a reinforcing frame embodying the features of my invention;

Figs. 4, 5 and 6 are views similar to Fig. 3 showing modified forms of reinforcing frames;

Fig. 7 is a perspective view showing a reinforcing member;

Fig. 8 is a top plan view of a portion of a wall showing the use of the reinforcing frame illustrated in Fig. 3;

Fig. 9 is a perspective view showing a modified form of a reinforcing member;

Fig. 10 is a view similar to Fig. 8 showing the use of the reinforcing member shown in Fig. 9;

Fig. 11 is a view similar to Fig. 10 showing another use of the reinforcing member of the type shown in Fig. 9;

Fig. 12 is a perspective view showing another modified form of reinforcing frame;

Fig. 13 is a fragmentary view of a wall showing the use of the frame illustrated in Fig. 12;

Fig. 14 is a perspective view of another frame;

Fig. 15 is a fragmentary view of wall showing the use of the frame shown in Fig. 14;

Fig. 16 is a perspective view of another frame;

Fig. 17 is a fragmentary view of a wall showing the use of the frame shown in Fig. 16;

Fig. 18 is a perspective view of another frame;

Fig. 19 is a fragmentary view of a wall showing the use of the frame shown in Fig. 18;

Fig. 20 is a perspective view of another frame;

Fig. 21 is a fragmentary view of a wall showing the use of the frame shown in Fig. 20.

Referring to the drawings by reference characters, I have indicated a brick embodying the features of my invention generally at 10. The brick as shown has a hole 11 in the upper face and a hole 12 in the lower surface. The holes preferably are in alignment and have side walls 13 forming a polygon with a diagonal of the polygon parallel to the edges of the brick.

In Fig. 8 the brick 14 has a rectangular hole 15 in the upper and lower surfaces thereof and this hole is polygonal with the side thereof and parallel to the edges of the brick.

In Fig. 10 the brick 16 has three holes 17 in the upper and lower surfaces and these holes are shown as cylindrical.

It will be understood that the top holes 15 and 17 are in alignment with the bottom holes 15 and 17 of the same brick, in fact if desired, all the holes 11, 15 and 17 may extend continuously through the brick.

A reinforcing member embodying the features of my invention is indicated generally at 18 in Fig. 3. This reinforcing member includes three sides, 19, 20 and 21. The sides 19 and 20 are identical and are each provided with downwardly extending arms 22 at one end which meet and which are secured together as by spot-welding. The member 21 is made of two pieces of material 23 and 24 having downwardly directing arms 25 and 26 welded to arms 27 and 28 on the members 19 and 20, respectively. The members 23 and 24, also, have arms 29 and 30 which are welded together. The arms at the apices of the diagonal extend in one direction while the arms intermediate the base of the diagonal extend in the reverse direction.

In Fig. 4 I have shown a slight modification wherein the reinforcing member 31 instead of being made of wire strips welded together is made of a single strip bent to form arms 32, 33 and 34 at the apices with the free ends bent upwardly and secured together to form arms 35.

In Fig. 5 the reinforcing member indicated generally at 36 is made as a metal stamping including downwardly bent arms 37 and upwardly extending arms 38.

In Fig. 6 the reinforcing member indicated generally at 39 is made of three pieces of wire or other material having an arm 40 at one apex which extends in one direction and having arms 41 and 42 at the other apices extending in a reverse direction.

In Fig. 7 the reinforcing member indicated generally at 43 has a horizontally extending arm 44 and a pair of downwardly extending arms 45 and 46.

In Fig. 9 the reinforcing member is indicated generally at 47 and has end arms 48 and 49 which extend in one direction and a pair of arms 50 intermediate the length thereof and spot-welded together. This reinforcing member 47 is

shown in Fig. 10 as operatively positioned to tie a three course brick wall together.

In Fig. 11 the reinforcing member 47 is shown as of slightly greater length and adapted to tie a three course brick wall together in a different manner.

In Fig. 12 the reinforcing member is indicated generally at 51 and is diamond shaped. This reinforcing member is made of four pieces of wire having downwardly directed arms 52 and 53 welded together at diagonally opposite sides and having another pair of arms 54 welded together and extending in the same direction as the arms 52 and 53 while opposite the arms 54 other arms 55 which extend in the reverse direction of the arms 54 are welded together. The reinforcing member indicated generally at 56 is triangular in shape and has three downwardly extending arms 57, 58 and 59 which are welded together and which extend in one direction and has an arm 60 which extends in the reverse direction to the other arms.

In Fig. 16 the reinforcing member indicated generally at 61 is rectangular and at each corner has downwardly extending arms fitted together and at which arms are provided other arms 63 which extend in a direction reverse to the arms 62. The reinforcing member indicated at 64 in Fig. 18 is similar to the reinforcing member 61 and includes downwardly extending arms 65 and intermediate arms 66.

In Fig. 20 the reinforcing frame indicated generally at 67 is rectangular and has a pair of arms 68 which extend in one direction and another pair of arms 69 which extend in the reverse direction.

By the use of the bricks and by the features of my invention and the use of the reinforcing members described I am enabled to build any type of brick wall and reinforce it in any desired fashion in order to protect against strains of any character which may be set up within the wall.

In Fig. 1 I have indicated a wall generally at 70. This wall has a two course brick wall and is made of bricks 10 previously described and laid in layers with mortar therebetween and between the courses. In the layer indicated generally at A a reinforcing member which as shown at 61 in Fig. 16 is shown. The arms 62 of this reinforcing member extend upwardly and fit into the bottom holes in the superimposed layers of brick indicated at B wherein the bricks extend at right angles to the bricks in layer A. The arms 63 extend downwardly into the holes 11 of the bricks in the layer A. It will be understood that the holes 11 are filled with mortar or cementitious material and due to the shape of the holes lateral movement of the bricks merely tends to cause the arms 62 and 63 to compress the mortar towards one of the apices of the holes.

In the layer B a reinforcing member of the type shown at 18 in Fig. 3 is provided. These reinforcing members are arranged with the arms 22, 25, 28, 26, and 27 in the upwardly opening holes 11 while the arms 29 and 30 extend upwardly and fit into the downwardly facing holes of the next layer of brick. It will be understood that the reinforcing members 31 and 36 shown in Figs. 4 and 5, respectively, may be used in place of the reinforcing members 18 in the layer B depending on the requirement in the particular case.

At the corner indicated generally at 71 the reinforcing member 43 shown in Fig. 7 is provided to tie in the corner bricks.

In Fig. 8 the reinforcing member which connects the bricks 14 is shown as the reinforcing member 18 which was shown in Fig. 3. This reinforcing member has the downwardly directed arms embedded in the holes 15 which are filled with mortar or other cementitious material while the other extending arms intermediate the sides 21 will be embedded in the holes in the superimposed layers of brick.

In Figs. 10 and 11 the bricks 16 have certain of the holes 17 thereof connected by reinforcing members 47 which are shown in detail in Fig. 9. In Fig. 10 the reinforcing member is transverse while in Fig. 11 the reinforcing member is arranged diagonal.

In Fig. 13 the bricks 16 have holes 17 to receive the downwardly directed arms 52, 53 and 54 of the reinforcing member 51 while the upwardly extending arm 55 of this reinforcing member fits in a hole in the superimposed brick.

In Fig. 15 the triangular reinforcing member 56 is illustrated in use while in Figs. 19 and 17 the use of the rectangular reinforcing members 61 and 64 is indicated. The brick 72 shown in Fig. 19 is similar to the brick 18 except that only one hole indicated at 17 is provided.

In Fig. 21 the bricks 74 are provided with hexagonal holes 75 in which arms on the reinforcing member 67 are fitted.

From the foregoing description it will be apparent that I have invented a novel brick wall construction and reinforcement therefor which is simple in construction and which can be economically manufactured and which is highly efficient in use.

Having thus described my invention, I claim:

1. In a wall reinforcement, a reinforcing frame made of metal and comprising a triangular body, said body having projecting arms at each apex thereof, said body having also a projecting arm medially of the length of one of the sides.

2. In a wall reinforcement, a reinforcing frame made of metal and comprising a triangular body, said body having downwardly directed arms at each apex thereof, said body having also an upwardly directed arm medially of the length of one of the sides.

3. In a wall reinforcement, a reinforcing frame made of metal and comprising a triangular body, said body having arms projecting from each apex thereof, said body having also an arm intermediate the length of a leg of the triangle and projecting in a direction opposite to that of the first mentioned arms.

4. In a wall reinforcement, a reinforcing frame made of metal and comprising a rectangular body, said body having arms projecting from the apices thereof, said body having other arms medially of the length of the sides and projecting in a direction opposite to that of the first mentioned arms.

5. In a wall reinforcement, a reinforcing frame made of metal and comprising an isosceles triangular body, said body having arms projecting from each apex thereof, said body having also an arm medially of the length of the base of the triangle and projecting in a direction opposite to that of the first mentioned arms.

6. In a wall reinforcement, a polygonal frame made of metal and comprising a closed body, said body having projecting, spaced, parallel arms at each vertex thereof, certain of said arms extending in one direction and other arms projecting from the body in a reverse direction.

HUGH G. MACWILLIAM.