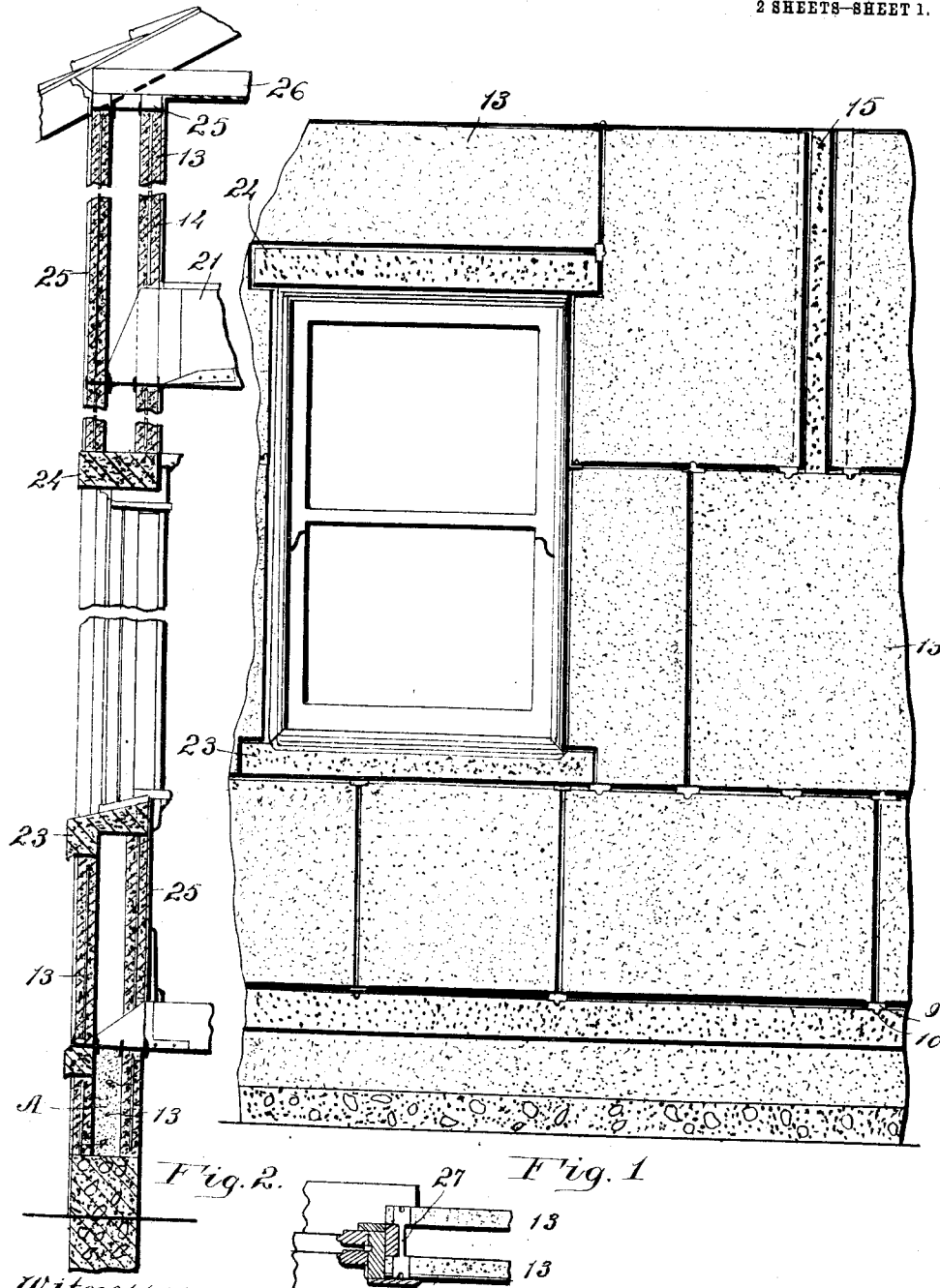


C. B. HARP.
BOND AND REINFORCEMENT FOR HOLLOW WALL CONSTRUCTION.
APPLICATION FILED MAY 23, 1912.

1,063,439.

Patented June 3, 1913.

2 SHEETS—SHEET 1.



Witnesses:
Edmund Gasold.
H. C. Clynne

Fig. 8.

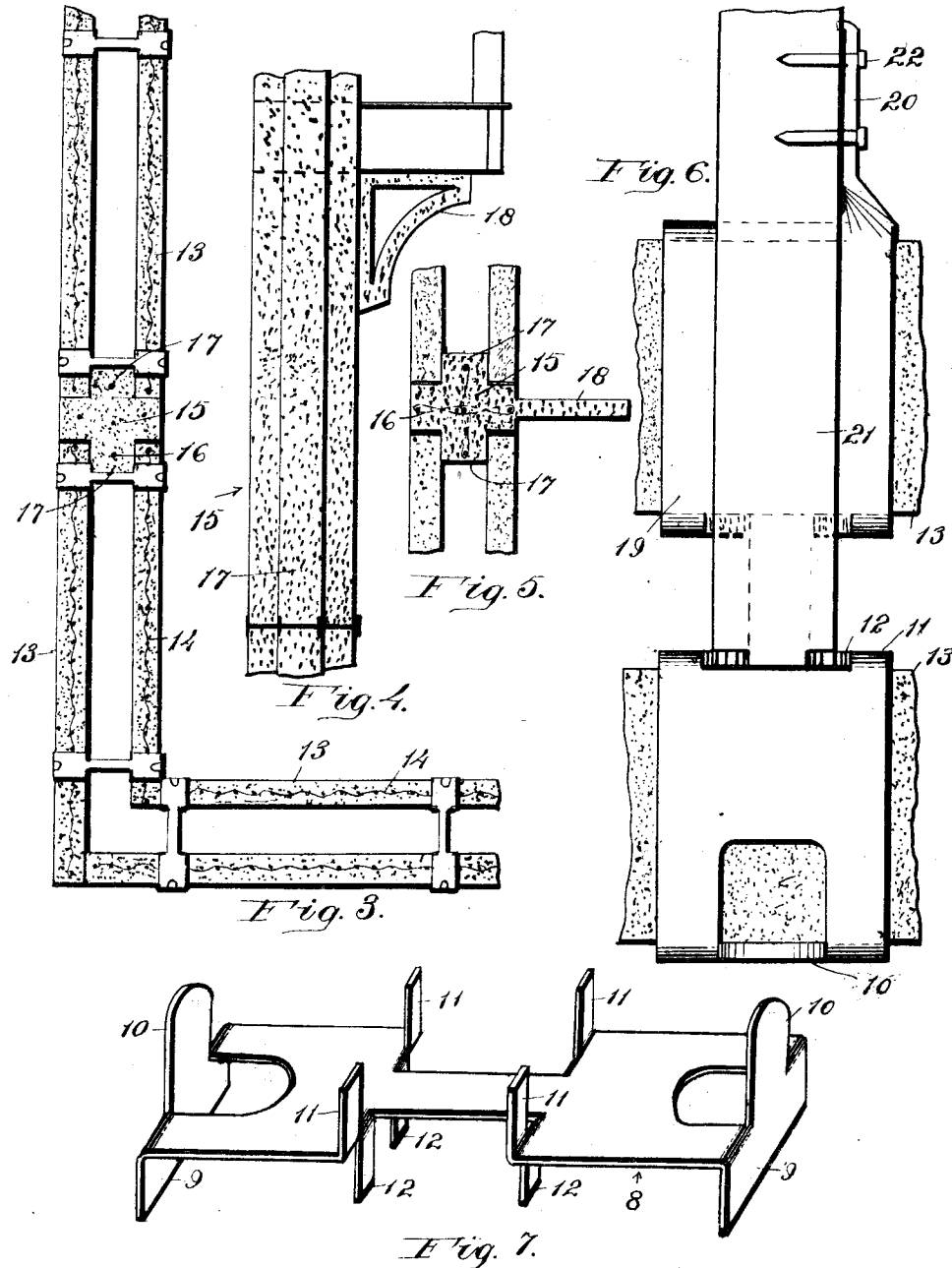
Inventor:
C. B. Harp
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UNITED STATES PATENT OFFICE.

CHARLES B. HARP, OF LOS ANGELES, CALIFORNIA.

BOND AND REINFORCEMENT FOR HOLLOW-WALL CONSTRUCTION.

1,063,439.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed May 23, 1912. Serial No. 659,399.

To all whom it may concern:

Be it known that I, CHARLES B. HARP, a citizen of the United States, and resident of Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Bonds and Reinforcements for Hollow-Wall Construction, of which the following is a specification.

10 My invention pertains to building construction, and it has special reference to means for constructing a hollow wall from blocks, slabs, or brick, made of concrete, terra cotta or other material, best adapted
15 for the purpose, and in so bonding together and reinforcing the structure as to make a rigid wall, which may be plastered within and without, thus assuring a type of wall which will resist moisture and provide an
20 air space between the companion walls which are formed by this structural arrangement, as will now be set forth in detail.

In the accompanying drawings, Figure 1
25 is a side elevation of portion of a building, showing the manner of arranging the separate units and of bonding them. Fig. 2 is a vertical section of a wall showing the structural arrangement of the joist, openings, and headers. Fig. 3 is a horizontal
30 section of a corner portion of wall. Fig. 4 is an edge view of one of the reinforcing studs, with a bracket integral therewith. Fig. 5 is a top view of one of the reinforcing
35 studs with its bracket, and the slab connection therewith. Fig. 6 is an enlarged top view of a portion of the wall showing the joist connection. Fig. 7 is a perspective view of one of the ties, for the companion
40 slabs, and Fig. 8 is a horizontal section of one side of a window frame showing the slab connection therewith.

In carrying out my invention I prepare a metal tie, which comprises a rectangular
45 sheet metal body 8, which has at each end a downwardly-projecting cross wing 9, a portion of the metal body back of each flange being stamped out to form a narrow wing 10 which projects upwardly.

50 Midway between its ends the body has four wings 11 struck out of the body and bent upwardly at right angles, and four wings 12 bent downwardly also at right angles to the body of the metal, the distances between the wings 11, 11 and 10 be-

ing equal to the thickness of the slabs which constitute the wall.

The slabs 13 while preferably made of concrete, and provided with an interior webbing of wire mesh, as at 14, may be
60 made of any other suitable material, but I prefer them made up in large units.

In the process of laying up the wall with such slabs they have their ends abutting each other, and an inner and an outer wall
65 is formed the distance between the walls being determined by the distances of the wings 10, 11, or 9, 12 from each other, and when in position the wings 9, 10 and 11, 12 form the outer and inner supports for the
70 slabs. I prefer to place these ties at the joined ends of the slabs, but they may be located at any point, as shown in the face of the wall, Fig. 1.

75 With a view of providing a reinforcing means at suitable intervals, I form studs 15 of concrete, which are reinforced by metallic means, one such type of reinforcement being shown by the wire mesh and bars 16, Figs. 3 and 5. These studs are cross-shaped
80 in cross section, the body of the cross along the longitudinal line of the wall, as at 17 being of a thickness equal to the hollow space formed between the walls, and also of such dimensions transversely that the metal tie
85 heretofore described will fit on the inner and the outer slabs, and thus afford a means whereby the respective wings of the tie will hold the slabs from lateral displacement. These reinforcing studs may be made in a
90 variety of forms, as they may have molded therewith not only brackets, 18, Figs. 4, 5, but also other structural arrangements or ornamental adjuncts as will add to the attractiveness of the building.

95 It is also obvious that I may modify the structure of the tie to add to its usefulness. Thus, in Fig. 6, I show a tie 19 which has at its inner end an integral extension plate 20, this plate being designed to lap along-
100 side of the joist 21, so that the tie in this condition receives the end of the joist 21, and the tie itself has its extension plate 20 nailed to the side of the joist, as at 22, thereby holding the inner and outer tile together
105 firmly.

My form of construction readily adapts itself for making openings, like windows or doors in a wall. In Fig. 2 I show a simple structure of this character in which the sill
110

23 and the header 24 are both molded the proper shape and dimensions for the window, the bottom and ends of the sill being not only adapted to receive the window frame, but also to receive the abutting double wall elements. The sill and header may be molded with suitable ornamentation, and the sill below and header above are both capable of being held in alinement by the metal ties in a simple and efficient manner. It should be observed that I do not extend these reinforced studs from the bottom to the top of the wall, but I prefer to have them in short length;—that is running vertically along only a single slab, as shown in Fig. 1, in one course of slabs, and in the next course these studs are located between the next vertical joints between the slabs, thereby affording a means whereby the reinforcement is possible with a broken jointed wall.

It will be observed that the upper ends of the companion wall are provided with a header 25, which may be made either of wood or concrete, the object being to bind together the companion walls, and on this header, which extends along the wall longitudinally, the upper joists 26 are placed as shown.

The slabs which abut the side of the window frame, may have a wooden filling strip, as shown, for instance in Fig. 8, this strip being of such width as to properly space apart the inner and the outer slabs, and when the tie overlaps the two slabs, and the window frame is placed in position and secured to the wooden filling strip, the whole structure becomes homogeneous, and also serves as a bracing for the wall.

It is obvious that the hollow space or spaces between the companion wall may be filled with concrete, so as to provide a wall capable of sustaining a heavy load and adapted for lateral stress, which would be desirable for warehouse, factory buildings, or other like structures. I show such interior filling at A, Fig. 2.

In practice the inner and the outer walls are plastered, as at 25, the whole making

not only a rigid but an ornamental wall readily laid in and easily lined up in the process of building.

What I claim as new, is:—

1. In a building construction, a series of slabs spaced apart to form an inner and an outer wall, a stud between the slabs, and ties with wings engaging the slabs near the studs and overlapping and engaging the studs, interlocking the inner and outer walls and studs together.

2. In a building construction, a series of slabs spaced apart to form an inner and an outer wall, a concrete stud between the ends of the slabs, the inner and outer faces of the stud being substantially flush with the inner and outer faces of the slabs, and ties with wings engaging the slabs near the studs and overlapping and engaging the studs, interlocking the inner and outer walls and studs together.

3. In a building construction, a series of slabs spaced apart to form an inner and an outer wall, a concrete stud between the ends of the slabs, and ties with wings engaging the slabs near the studs and overlapping and engaging the studs, interlocking the inner and outer walls and studs together, the ties having wings engaging the inner faces of both walls.

4. In a building construction, a series of slabs spaced apart to form an inner and an outer wall, a concrete stud between the ends of the slabs, and ties with wings engaging the slabs near the studs and overlapping and engaging the studs, interlocking the inner and outer walls and studs together, and a bracket cast integral with the stud and projecting from the outer face thereof.

Signed at the city of Los Angeles, county of Los Angeles, State of California, this 16th day of May, 1912, in the presence of witnesses.

CHARLES B. HARP.

Witnesses:

J. S. ZERBE,
ARTHUR HESS.