C. B. HARP.

BUILDING CONSTRUCTION.

APPLICATION FILED MAY 22, 1913.

1,142,093. Patented June 8, 1915.

Fig. 1.

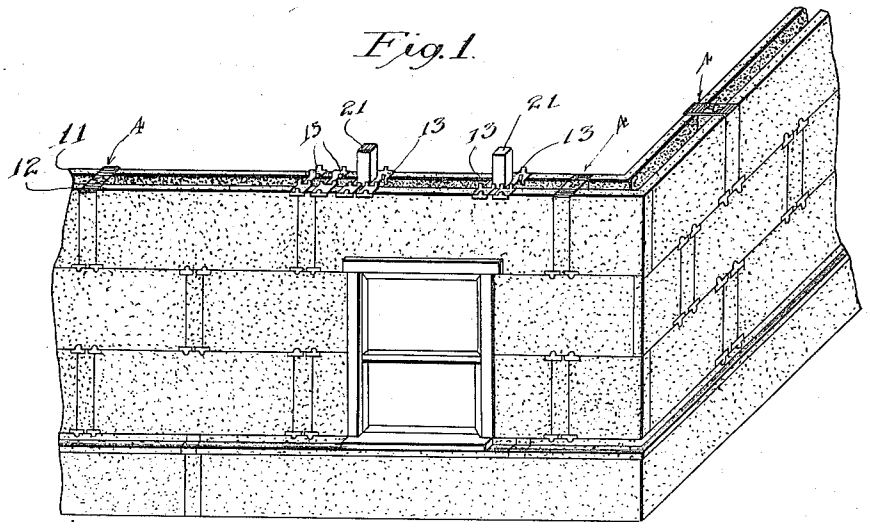


Fig. 2.

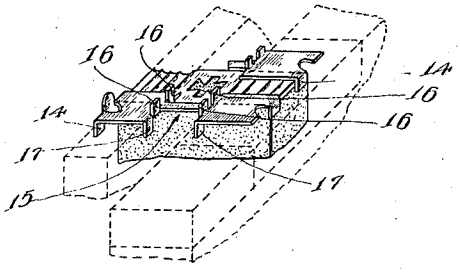


Fig. 3.

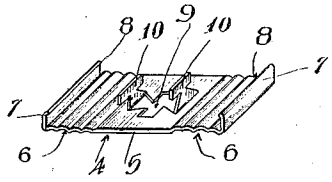


Fig. 4.

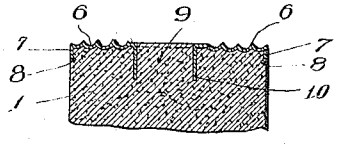


Fig. 5.

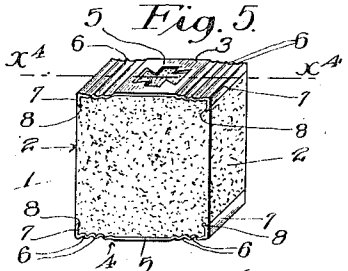
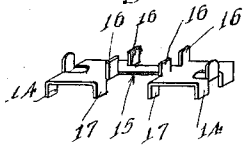


Fig. 6.



Witnesses:
Sully Jusso
Lita A. Peters

Inventor
Charles B. Harp.
by Ryan & Hawley
Attys.

UNITED STATES PATENT OFFICE.

CHARLES B. HARP, OF LOS ANGELES, CALIFORNIA.

BUILDING CONSTRUCTION.

1,142,093. Specification of Letters Patent. Patented June 8, 1915.

Original application filed December 2, 1912, Serial No. 734,637. Divided and this application filed May 22, 1913. Serial No. 769,311.

To all whom it may concern:

Be it known that I, CHARLES B. HARP, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Building Construction, of which the following is a specification.

This application is a division of a former application of mine, filed December 2nd, 1912, Serial No. 734,637, and the present application relates to protecting the ends of the short studs to prevent crumbling of their edges, and to the interlocking therewith of bonds for spacing the inner and outer wall slabs.

The invention also relates to the bond adapted to be severed through its narrow neck.

Referring to the drawings: Figure 1 is a perspective view of a portion of a corner of a building embodying the invention. Fig. 2 is a perspective view in detail of the upper end of a stud, the interlocking ties and slab portion and inner portion of the wall being shown in dotted lines, a part of one of the ties being broken away. Fig. 3 is a perspective in detail of the stud protecting end plate. Fig. 4 is a section on line x^4—x^4, Fig. 5. Fig. 5 is a perspective view of a stud showing a pair of protecting plates secured thereto. Fig. 6 is a perspective of a tie plate.

1 designates the short stud having side edges 2 and top face 3 and bottom face 4. On the top and bottom faces are metal plates 5, which completely cover the faces of the slab. Each plate is preferably formed with ridges 6 at the end, the line of these ridges being parallel with the plane of the wall of the building. Each plate has a flange 7 at each end with its lower edge inbent as at 8. The central portion of each plate is smooth and formed with a central recess 9, which is produced by bending down wings 10, which are struck out from the metal. The concrete of which the stud is formed is molded around the plate so that the wings 10 are embedded permanently as well as the inner flange 7 with inbent portions 8. This permanently and securely locks the plate to the slab, preventing it from becoming displaced and distributing pressure over the end of the slab and preventing the edge of the slab from crumbling. These studs are assembled in the building, as shown in Fig. 1, the inner edge of the stud being flush with the inner face of the wall, and the outer edge of the stud being flush with the outer face of the wall. Each side of the stud abuts against the edge of the adjoining inner slabs 11 and outer slabs 12, and is interlocked in position by a tie plate 13, as shown in Fig. 1. The tie plate 13 has downturned flanges 14 on the ends which engage on the outside edge of the stud and outer slab 12, and with a similar flange which engages on the opposite inner edge of the stud and inner face of the inner slab 11. A pair of tie plates are arranged at opposite edges of the stud as shown in Fig. 1, and thereby interlock the parts together. The tie plate has a central notch 15 formed by striking out upturned lugs 16 and downturned lugs 17, which lugs rest against the inner faces of both the inner and outer slabs 11 and 12 and space the slabs properly apart. It will be noted that the metal plates 5 on the ends of the stud rest upon the metal tie plates, thus the contacting portions of the parts forming the structure are of metal which prevents crumbling of the edges. Where the window is located the studs 21 extend along the side of the window, and these studs are entirely inclosed between the inner and outer slabs and are interlocked in position by the tie plates being received in notches 15 in the tie plates, if desired.

Any tendency of the wall to bend inwardly or outwardly from a vertical plane causes a compression strain to be thrown against the outer corners of the short studs, which abut against the short slabs above and below, and the corners of the studs which are subjected to such strains are prevented from crumbling away by metal plates, so that the effective leverage of the end faces of the studs is maintained at the maximum. Thus in a wall built with such studs, assuming there to be a tendency of the wall to either bend or buckle inwardly, a stud which lies in such portion of the wall will have its upper end moved inwardly, thereby tilting the stud from a vertical position and raising its outer upper corner and depressing its inner lower corner so that these two diagonally opposite corners are subjected to the greater pressure, and it is the resistance of these metal shod corners which prevents the wall from bending. Therefore, if the cor-

ner of the stud were not thus protected, the resistance would not be presented at the extreme corner, but would lie at a point closer toward the center line of the stud, which would give much less leverage against the slab, and the resistance to the buckling action would thus be weakened to a considerable extent. Where the tendency of the wall is to buckle outward, the diagonally opposite corners of the stud will be subjected to the compression strains and the same effect will be produced. Therefore, in a wall of this character the greatest possible strength is obtained by the construction herein which maintains the corners of the studs in perfect condition.

What I claim is:

1. In a building construction, a series of slabs forming an inner wall, a series of slabs forming an outer wall, short studs arranged with their inner edges flush with the inner face of the inner wall, and their outer edges flush with the outer face of the outer wall, a metal protecting plate covering the upper edge of the stud, and a similar plate covering the lower edge of the stud, the outer and inner corners of the upper plate bearing against the respective outer and inner slabs above said plate, and the outer and inner corners of the lower plate resting respectively against the upper edges of the outer and inner slabs below said plate.

2. A concrete building stud, and a metal plate bearing against the respective pressure sustaining ends thereof, each metal plate being formed with means on its face for receiving mortar to bond the adjacent member resting upon the plate.

3. As a new article of manufacture, a concrete building stud, and a metal plate on each end thereof, each metal plate having a series of corrugations extending transversely of the plate parallel with the outer and inner edge surfaces of the stud, said plate having lugs struck out from the center portion thereof, said lugs being molded in the stud.

4. A concrete building stud, and a metal plate on each end thereof, each metal plate having a series of corrugations extending transversely of the plate parallel with the outer and inner edge surfaces of the stud, the outer ends of the plate being bent at right angles to the plate and flush with the outer and inner edge surfaces of the stud, and being inbent along the lower edge and embedded in the stud.

5. A concrete stud and metal plate on each end thereof, said metal plate having transverse corrugations at each edge and the ends of the plate being bent above and flush with the surfaces of the outer and inner edges of the stud, each of said plates having dovetailed lugs struck out from the center portion of the plate and permanently embedded in the stud.

CHARLES B. HARP.

In presence of—
GEORGE T. HACKLEY,
MARTHA M. LANGE.