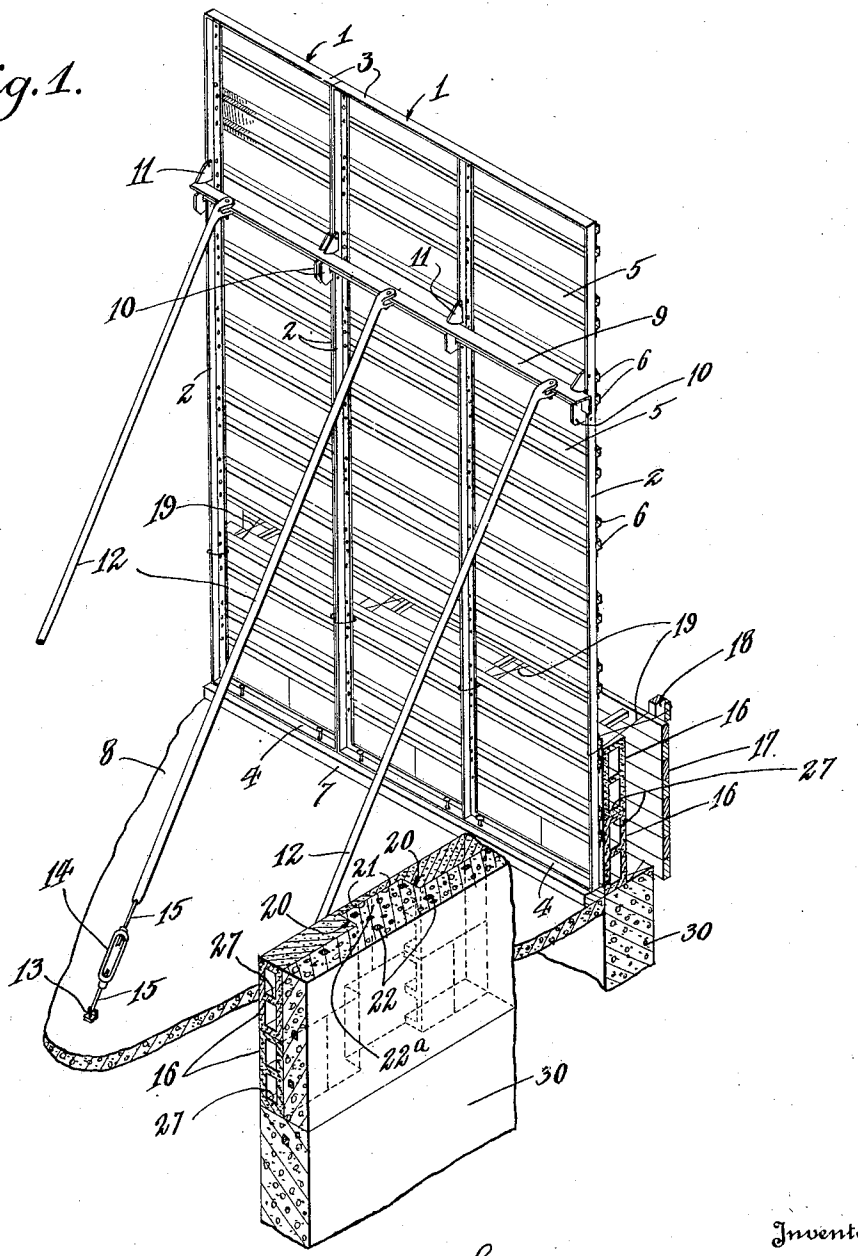
March 10, 1931. L. G. KNIPE 1,795,338

BUILDING CONSTRUCTION

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Fig. 1.



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Fig. 2.

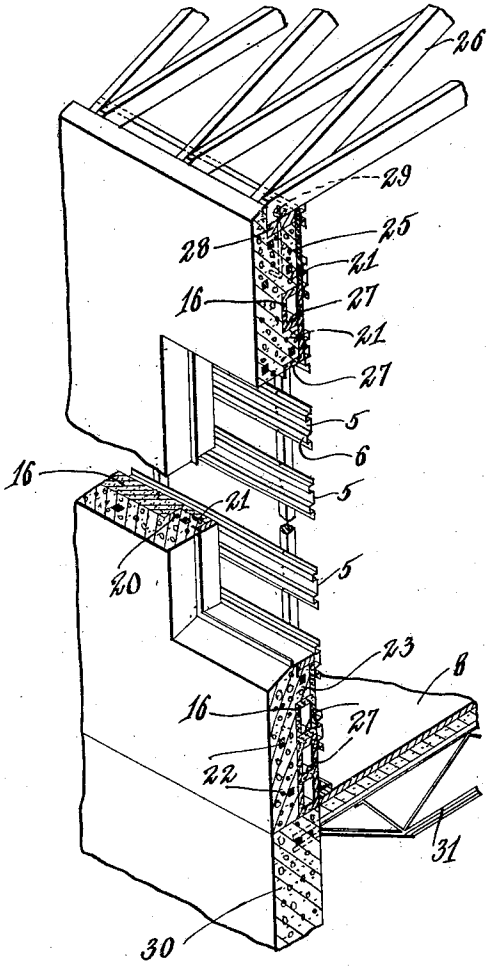
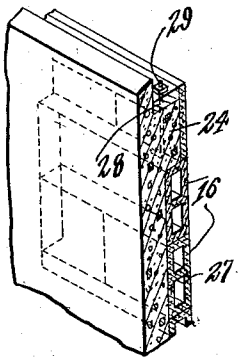


Fig. 4.



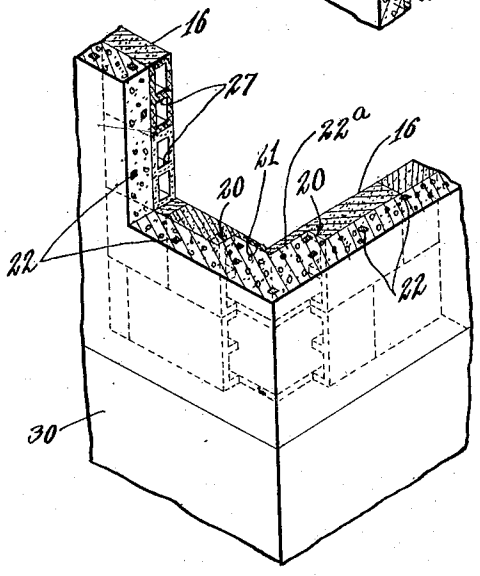


Fig. 3.

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Patented Mar. 10, 1931 1,795,338

UNITED STATES PATENT OFFICE

LEIGHTON G. KNIPE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO INSULATED CONCRETE SYSTEM, LTD., OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA

BUILDING CONSTRUCTION

Application filed October 8, 1929. Serial No. 398,184.

This invention relates to building constructions, and is more particularly related to a method and means of constructing a wall to form, during the construction of such wall, vertical columns and horizontal beams at points of increased stress or strain. This invention relates to an improvement over the manner of building construction disclosed in a patent heretofore issued to me, No. 1,546,493 granted July 21, 1925.

An object of this invention is to provide a method of forming a composite wall wherein there is employed a false work vertical frame for determining the plane of the inside surface of the wall, and against which false frame work building materials such as gypsum blocks are positioned to form the inner surface of the wall, and spaced from which gypsum blocks or building material there is formed an outer retaining mold so that concrete or other building materials may be molded between the gypsum blocks and the outer molding frame to form the exterior surface of the building. and the method and means of forming, during the construction of such wall, sections of increased strength by the cutting away of the building materials forming the inner surface of the wall in a manner to form sections of increased cross-sectional area of the concrete or other molded portion of the wall in a manner to form horizontal beams for the purpose of bridging doorways, windows and the like, and to form vertical columns or pillars.

Other objects and advantages of this invention it is believed will be apparent from the following detailed description of a preferred embodiment thereof as illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a perspective view of a fragment of a wall formed in accordance with this invention.

Figure 2 is a second fragmental perspective view illustrating the method embodying my invention of forming portions of the wall of increased strength to provide for a window opening and for a horizontal ceiling beam to support a roof or upper floor section.

Figure 3 is a fragmental perspective view illustrating the manner of forming a vertical column embodying this invention.

Figure 4 is a fragmental perspective view illustrating the method embodying this invention of forming a bond beam to which an anchor plate is secured and held by bolts cast or molded into the molded portion of the wall embodying my invention.

In the preferred embodiment of my invention illustrated in the accompanying drawings, 1 indicates false work frames which may be of any suitable or desirable construction, and are herein illustrated as being formed of vertically extending angle irons 2 which are secured to upper and lower horizontally extending angle irons 3 and 4 respectively.

Positioned in spaced relation along the angle irons 2 and 2 are face rods 5, the surfaces 6 of which determine the inner face of the wall of the building. The frames 1 are aligned by securing the base angle iron 4 of said frames to a strip of wood or like material 7 which is positioned along the floor 8 at the point where the wall is desired.

This construction may be used either for the purpose of forming partition walls or the outer walls of a building as desired. The frames are then aligned by securing the same together by means of a transversely extending angle iron 9 which is fitted into brackets 10 carried by the angle irons 2 of the respective frames 1. A lock plate 11 may be employed to lock the angle iron 9 in position in relation to the brackets 10. Secured to the angle iron 9 are plumb rods 12, and these rods 12 are at their opposite ends adapted to be secured to the floor 8 of the building by any suitable means such, for example, as the clips 13. Interposed between the ends of the rod 12 and the clips 13 are turn-buckles 14 which are screw-threaded to eye bolts 15 at their opposite end in order to enable each rod 12 to be lengthened or shortened as required in order to accurately vertically position the frames 1. In this manner the entire inner false work composed of the frames 1 is accurately aligned and positioned so that when the gypsum blocks 16 are positioned against the faces 6 of the face rods 5, the inner sur-

face of the wall will be formed in vertical alignment without the necessity of individually vertically aligning the gypsum blocks 16.

The gypsum blocks 16, when thus positioned, are spaced from an exterior frame work 17 which is formed of boards or other suitable material and held in position by means of posts 18. In order to tie the molding frames 17 thus formed to the false frame formed of the frame 1, the posts 18 are tied to the frame 1 by means of wires 19.

In forming an ordinary section of the wall, concrete or like plastic material which will set is poured into the space left between the outer surface of the gypsum blocks 16 and the mold frames 17. The concrete thus provides a means of forming the exterior surface of the wall as well as a means of bonding the individual gypsum blocks 16 in position.

In forming the corners of a building, and in order to form this particular section of the building wall of greater strength, the gypsum blocks 16 which are positioned adjacent the abutting frames 1 are cut out as indicated at 20 to form a space of increased cross-sectional area between the outer molding frame and the cut-out outer face 21 of the gypsum blocks 16. This provides a chamber of increased cross-sectional area so that when the concrete is poured, a column of cross-sectional area greater than the cross-sectional area of a similar portion of the wall is formed of the concrete material.

During the formation of the wall reinforcing material such as the reinforcing rods 22 are positioned in the space formed between the outer faces of the blocks 16 and are positioned both horizontally and vertically in order to reinforce the concrete wall to be formed. In this manner vertical beams may be provided at any desired point throughout the entire construction of the building.

When it is desired to form beams for the purpose of providing sections of the wall of increased strength for places where it is desired to provide windows, doors or beams for the provision of different floor levels or the supporting of the roof structure of the building, the gypsum blocks 16 are likewise cut out horizontally rather than vertically, and the concrete when poured fills in the cut-out portions of the concrete blocks to form horizontal beams 23 for the purpose of providing a window casing or floor beams 24 or a bond beam 25 for supporting the roof structure 26.

The gypsum blocks 16 employed are preferably of the cored, or hollow, construction providing in each block a plurality of cored-out chambers separated by horizontally extending partition walls 27.

In breaking away the gypsum blocks for the purpose of forming either the horizontally extending beams 23, 24 or 25, or the horizontally extending pillars 22*a*, it is only necessary to break through the relatively thin walls which separate these cored chambers in the positions desired. This forming of the gypsum blocks for the purpose of defining the pillars, beams or columns desired in a building construction may be accomplished very readily and accurately by sawing through the relatively thin walls of the gypsum blocks at the exact points desired.

In order to provide anchor plates for supporting the roof structure, window or door casings, anchor plates 28 are preferably mounted upon the horizontally extending upper surfaces of the beams 23, 24 and 25. These anchor plates are preferably held in position by means of bolts 29, which bolts 29 are inserted in the concrete forming such beams before the concrete has set. After the concrete has set, the bolts are extended through the anchor plates 28 and nuts screw-threaded upon the bolts 29 to securely hold the anchor plates 28 to the beam structure.

As illustrated in Figures 1 and 2, the wall structures embodying this invention may be formed directly upon the foundation 30 for the building, or at any position along the floor 8 where it is desired to position such a wall or partition.

In forming the foundation 30 for this construction it is preferable that floor joists 31 be positioned in the concrete forming the foundation so that the floor 8 may be formed directly upon such joists. This construction however is optional.

While I have herein set forth my invention as specifically addressed to a wall formed of a combination of concrete and gypsum blocks, it is to be understood that my improved mode of wall construction is applicable to the formation of a composite wall formed of any suitable slabs of material such, for example, as bricks, concrete blocks or slabs of any other material which may be utilized for the forming of an inner wall.

Upon removing of the inner false work frame, the inner surface is perfectly true. When using gypsum blocks, or a like material, the gypsum blocks absorb rather rapidly the moisture from the concrete when poured and return it to the concrete as the setting continues. The use of the hollow gypsum blocks 16 for the purpose of forming the inner wall provides a very excellent wall of heat and sound insulation so that a wall is formed which not only has the desired rigidity and strength, but which has an inherent characteristic, a sound and heat resistance not common to other types of construction.

Upon removal of the false frame for the inner wall or the molding frame 17 for the outer surface of the building, any suitable or desirable finishing material may be used for

producing the desired exterior or interior texture for the building.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. The mode of constructing a dual wall consisting in plumbing and lining a false work frame for the inner surface of the wall, positioning hollow gypsum blocks against the false work frame, positioning a molding frame in spaced relation to said gypsum blocks, cutting away a portion of the gypsum blocks through a vertical column to form a space of increased cross-sectional area between the cut-away face of said blocks and said molding frame, and filling the space between the gypsum blocks and the molding frame with concrete to form a wall with vertically extending columns.

2. The mode of constructing a dual wall consisting in plumbing and lining a false work frame for the inner surface of the wall, erecting a wall of hollow concrete blocks in direct contact with the frame, erecting a molding frame in spaced relation from the hollow gypsum blocks, cutting away a portion of the hollow gypsum blocks to form a horizontally extending beam providing a horizontally extending chamber of increased cross-sectional area between the cut-away surface of the gypsum blocks and the molding frame, and filling the space between the respective faces of said gypsum blocks and molding frame with concrete to form a dual wall having horizontally extending beams of increased cross-sectional area.

3. A method of constructing a dual wall consisting in plumbing and lining a false work frame for the inner face of the entire wall, positioning a molding frame in spaced relation with respect to the false work frame, erecting a wall of blocks in direct contact with the false work frame, cutting out the blocks to form spaces of increased cross-sectional area around an opening to be formed in said wall for the reception of a building appurtenance, positioning reinforcing material in the spaces thus formed between the faces of the blocks and the molding frame, and filling the said spaces with a suitable composition and removing the said frames when the dual wall is complete.

Signed at Los Angeles, California, this 10th day of September, 1929.

LEIGHTON G. KNIPE.