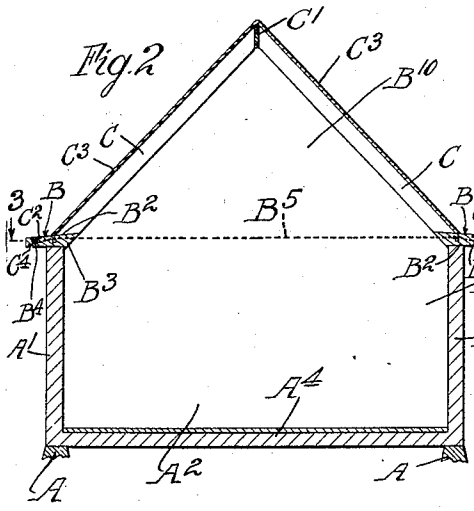
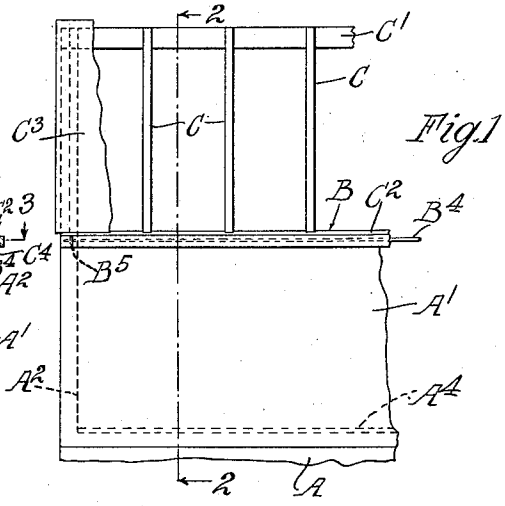
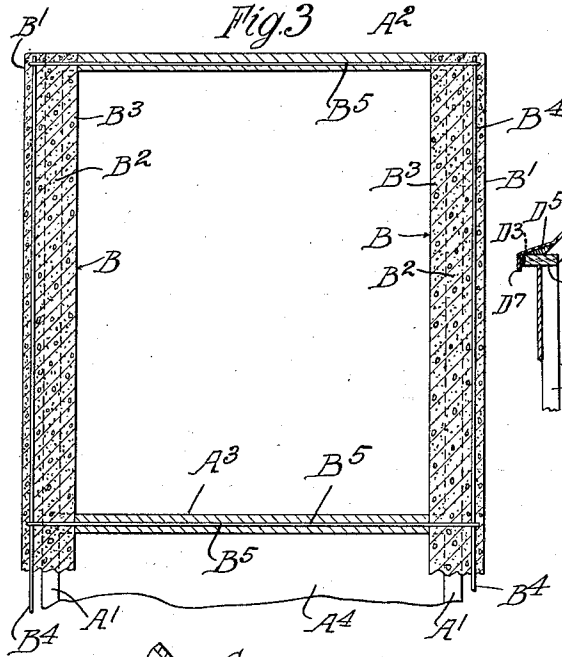
June 3, 1930. D. BEALE 1,761,289

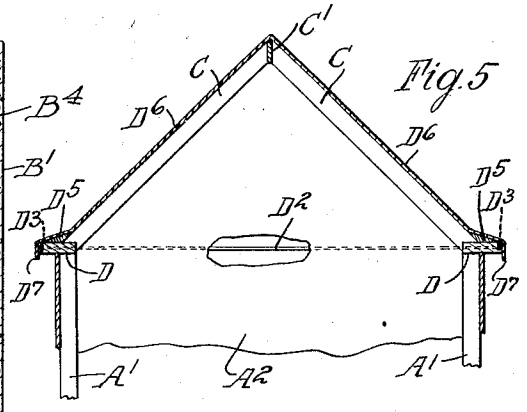
SYSTEM OF HOUSE CONSTRUCTION

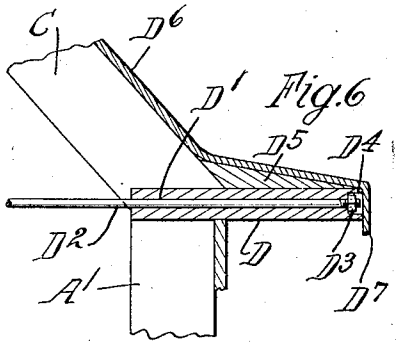
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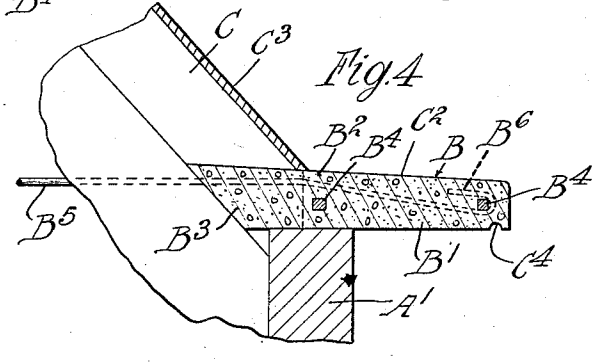












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June 3, 1930. D. BEALE 1,761,289

SYSTEM OF HOUSE CONSTRUCTION

Filed April 25, 1928 2 Sheets-Sheet 2

Fig.7

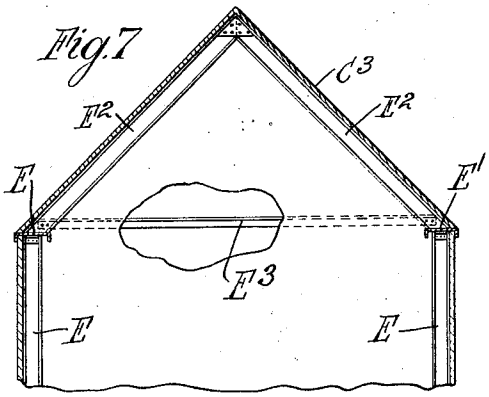


Fig.8

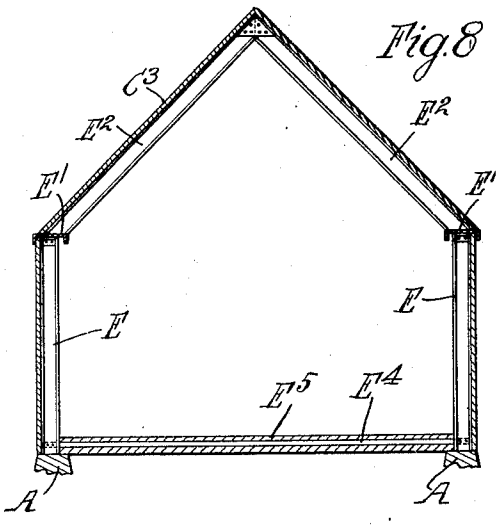


Fig.9

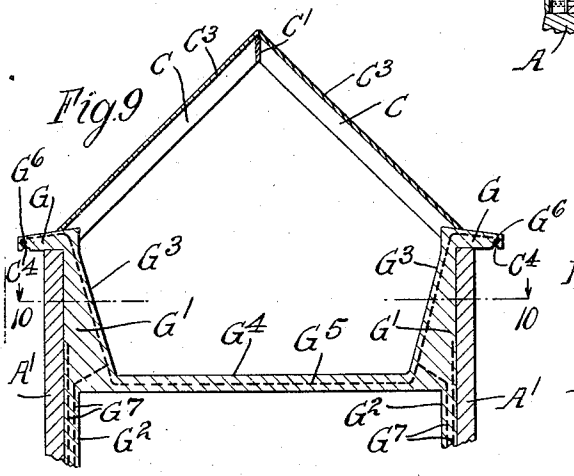


Fig.11

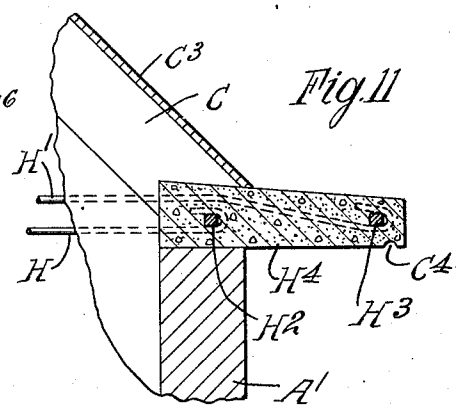
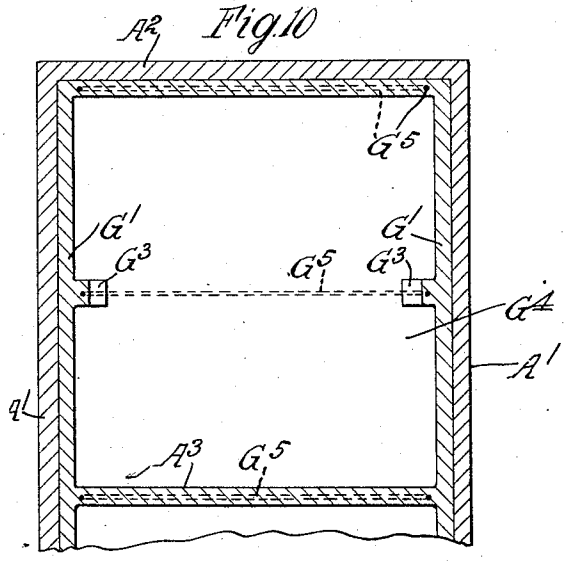


Fig.10



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UNITED STATES PATENT OFFICE

DAVID BEALE, OF NORTH CHATTANOOGA, TENNESSEE

SYSTEM OF HOUSE CONSTRUCTION

Application filed April 25, 1928. Serial No. 272,623.

My invention relates to a method of house construction and to buildings constructed according to such method. One object of my invention is the provision of means for supporting the roof in such fashion as to make unnecessary the employment of cross rafters, the result being a building in which the so-called attic space may be incorporated with the room space below it. Another object is the provision of a structure and a building method whereby walls of minimum height may be employed, owing to the incorporation into the room space of what is wasted attic space in the usual construction. Another object is the provision of means for cross-bracing or supporting the side walls, and particularly the beams at the tops of the side walls in order to eliminate to a minimum cross-connecting members. Another object is the provision of tension members for connecting side walls or beam structures at the top of side walls, which are so spaced and positioned as to be incorporated in or concealed in end walls or transverse walls. Another object is the provision of beam structures for wall tops which shall at the same time serve as roof supports and as eaves. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation with parts broken away;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a section on the line 3—3 of Figure 1;

Figure 4 is a partial transverse vertical section on an enlarged scale;

Figure 5 is a section similar to Figure 2 through a variant form of my structure;

Figure 6 is an enlarged section, similar to Figure 4, of the variant device;

Figures 7, 8 and 9 are vertical transverse sections through various applications of my invention;

Figure 10 is a section on the line 10—10 of Figure 9; and

Figure 11 is a partial vertical transverse section of a further variation of my invention.

Referring first to the form of Figures 1 to 4 A generally indicates any suitable foundation structure or support. A^1 indicates side walls, A^2 the end wall and A^3 a transverse partition wall and A^4 the floor.

Positioned upon the tops of the side walls A^1 are beam structures generally indicated as B and herein shown as including a portion B^1 outwardly extending from the wall, a portion B^2 overlying the wall and a portion B^3 inwardly extending from the wall. B^4 are longitudinal reinforcements, steel bars or the like, and B^5 is a transverse tie rod, herein shown as extending into the beam B which is formed, in any suitable manner, of concrete. The member B^5 may be hooked about the reinforcements B^4, as at B^6 in order permanently to tie the tie rod or tension member B^5 at each end to the transverse beams. Such rods or reinforcements B^5 may be incorporated either in end walls or in transverse partitions, as shown in Figure 3, but are preferably so spaced as to leave the space between such walls and partitions free and open, the transverse tension connection between any given pair of beams B being thus entirely concealed.

Thus the attic space, generally indicated in Figure 2 as B^{10} is left free of beams or supporting members and may form part of the room otherwise defined by the side walls A^1, the end walls A^2 and the transverse partitions A^3.

Referring to Figures 2 and 4, it will be seen that the rafters C extend upwardly and inwardly from the beams B, meeting at their tops as at C^1 and there being connected and supported upon each other in any suitable manner. The top of the beam B may be slightly downwardly and outwardly inclined as at C^2 in order to shed the water which flows down the roof proper C^3. C^4 indicates any suitable drip channels or means for preventing the water so discharged from flowing back along the bottom of the beam B to the wall A^1.

It will be understood that in effect the

beams B, tied together at their ends, and intermediately at partition points, take up all the lateral thrust of the rafters C. Thus to the walls there is transmitted only the direct downward thrust and the walls may be made of relatively light material or may be provided with spaced vertical strengthening points or supports, as for example the vertical beams E shown in connection with the form of Figures 7 and 8.

Referring to Figures 5 and 6 I employ a variant form of my device in which the longitudinal beams D rest upon the tops of the walls A^1 and are apertured as at D^1 to permit the passage therethrough of tie rods D^2 which may be locked for example by the nuts D^3 screwthreaded to the ends thereof and seated for example in sockets D^4. In this form the member D may if desired, be a flat wooden beam.

D^5 indicates a filler, above the beam, and D^6 any suitable roofing structure or covering, herein shown as continuing downwardly over the filler D^5 and downwardly about the edge of the beam D to terminate in a depending water-shedding edge D^7.

Referring to the form of Figures 7 and 8 I illustrate vertical supports E for the wall top beams, the members E being illustrated as I beams which may rest directly upon the foundations A. It will be understood that such beams may if desired be employed also with the form of Figure 1 in order to reinforce the walls A^1 or to permit the use of a lighter wall structure than would otherwise be possible.

In the form of Figures 7 and 8 however I employ for the upper beams channel beams E^1 upon which may be secured by any suitable means the upwardly and inwardly extending rafters E^2 illustrated as I beams, which may be connected, in partitions and end walls, for example by the transverse beams or tension members E^3. In Figure 8 I have illustrated the members E connected by transverse beams or tension members E^4 concealed in the floor E^5.

Referring to Figures 9 and 10 I apply my principal construction to the top story of a multiple story house, in order to increase the attic space. In such case, upon the walls A^1 I position top beams G generally identical with those shown in Figures 2 and 4 save for the downward projection therefrom of the supporting and reinforcing portions G^1 which in turn are supported upon vertical supports G^2. The members G^1 and its associated positions, which are downwardly and inwardly inclined as at G^3 to conceal reinforcing members, are connected with any suitable floor structure G^4. I have illustrated the main reinforcing element G^5 which extends from the longitudinal reinforcement G^6 of the beam downwardly through the portion G^1 or G^3 and across the floor G^4. G^7 G^7 are vertical reinforcements which may extend upwardly through the supports G^2 to the portion G^1 or to the floor G^4.

Referring to Figure 11 I employ a variant form of my device in which a plurality of tension members H H^1 are employed which may be hooked about a plurality of longitudinal reinforcements H^2 H^3 in the beam structure H^4.

It will be realized that whereas I have described and shown a practical and operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to my specific showing.

The use and operation of my invention are as follows:

It has been customary in the past to employ rafter ties extending from wall to wall or, when such ties are omitted, to employ a massive wall structure sufficiently powerful and heavy to resist the lateral thrust resultant from the employment of rafters upwardly and inwardly inclined from the wall tops. In constructing according to my invention I employ reinforcements or beams along the tops of the rafter supporting walls, these beams being tied together by a relatively small number of tie bars or other tension members, which may be concealed in a partition or end wall. Thus in effect I employ a roof structure, including these supporting beams and their transverse connections, which is a lid which can be placed on the top of thin walls and which exerts only downward pressure. The lateral stresses or thrusts are taken by the beams or reinforcements which run along the wall tops and which, being connected at intervals by the tension members concealed in end walls or in partitions, are in effect a single structural unit. Since this roof structure exerts only downward pressure, I may employ a light wall structure or, if I wish, a wall structure which is merely an intermediate covering which surrounds or is associated with spaced vertical supports, such as the I beams E of Figures 7 and 8.

Further, since the rafter ties are eliminated and the attic space is usable, I may drop the height of the wall, for one story houses, and incorporate the attic space with the main space of the house, thus very substantially reducing the cost of construction.

In a multiple story house I may obtain the result of a two story house by employing walls of one and one-half story height, by running the transverse tie rods or supports in the floor of the second story, as shown in Figures 9 and 10.

I further eliminate costs by eliminating the use of down spouts and gutters. The broad beam B or G, as the case may be, or D, serves to shed the water, and the height of the wall being low, the water may be allowed to drip directly from the eaves. I may employ any suitable means, such as the notch C^4, to prevent the flow of water back toward the wall along the bottom of the beam.

I claim:

1. A house construction, including walls spaced apart, longitudinal beams extending in parallel along the tops of such walls, transverse tension members connecting such beams, such tension members being concealed in transverse walls or partitions, and a roof structure mounted upon and supported upon the longitudinal beams, such roof structure including rafters extending upwardly and inwardly from said beams, the tension members being adapted to resist the outward thrust of said roof and rafters.

2. A house construction, including walls spaced apart, longitudinal beams extending in parallel along the tops of such walls, transverse tension members connecting such beams at their ends, and a roof structure mounted upon and supported upon the longitudinal beams, such beams, and the transverse tension members, being adapted to resist the outward thrust of the roof thereagainst intermediate the tension members, the tension members being concealed in transverse walls or partitions.

3. In a house construction, a roof support including horizontal supporting members positioned on the walls and transverse tension members connecting them, rafters inclined upwardly and inwardly from the horizontal supporting members and directing substantially their entire outward thrust thereagainst, the tension members being adapted, in connection with the horizontal supporting members, to resist the thrust against the horizontal supporting members, the tension members being positioned in transverse walls or partitions.

4. In a house construction, walls of relatively light construction, longitudinal reinforcing and supporting members extending along the wall tops and adapted to receive the downward and outward thrust of the roof, vertical supports for said longitudinal members, positioned at intervals along the wall, and transverse tension members, connecting said longitudinal members, and adapted, with said longitudinal members, to resist the outward thrust of the roof against the longitudinal members, such tension members being concealed in transverse walls or partitions.

5. In a house construction, a plurality of spaced walls, longitudinal beams extending from end to end of said walls, transverse tying tension members connecting said beams, rafters upwardly and inwardly extending from said beams and meeting intermediate said walls, said rafters being adapted to direct their outward thrust against said beams, and vertical supports for said beams spaced along said walls.

6. In a house construction, a plurality of spaced walls, longitudinal beams extending from end to end of said walls, transverse tying tension members connecting said beams, rafters upwardly and inwardly extending from said beams and meeting intermediate said walls, said rafters being adapted to direct their outward thrust against said beams, said transverse tension members being concealed in transverse partitions or connecting walls.

7. A house structure including low and lightly constructed walls, longitudinal beams extending along the tops of said walls, relatively strong and rigid in relation to said walls, and tension members connecting said beams at a plurality of points, said tension members being concealed in transverse walls and partitions, and a roof structure mounted upon said beams and adapted to direct pressure downwardly and outwardly against said beams, the structure which includes said beams and tension members being adapted to direct against the wall pressure only directly downwards.

8. A construction which includes relatively lightly constructed walls, relatively rigid beam members positioned in the upper portions of said walls, tension members connecting the beams of opposite parallel walls and roof rafters extending upwardly and inwardly from said beams and adapted to direct an outward thrust against said beams, the tension members being concealed in transverse walls or partitions.

Signed at Chattanooga, county of Hamilton and State of Tennessee, this 19th day of April, 1928.

DAVID BEALE.