Sept. 10, 1935. L. C. EGLOFF ET AL 2,014,315

BUILDING CONSTRUCTION

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Fig. 1.

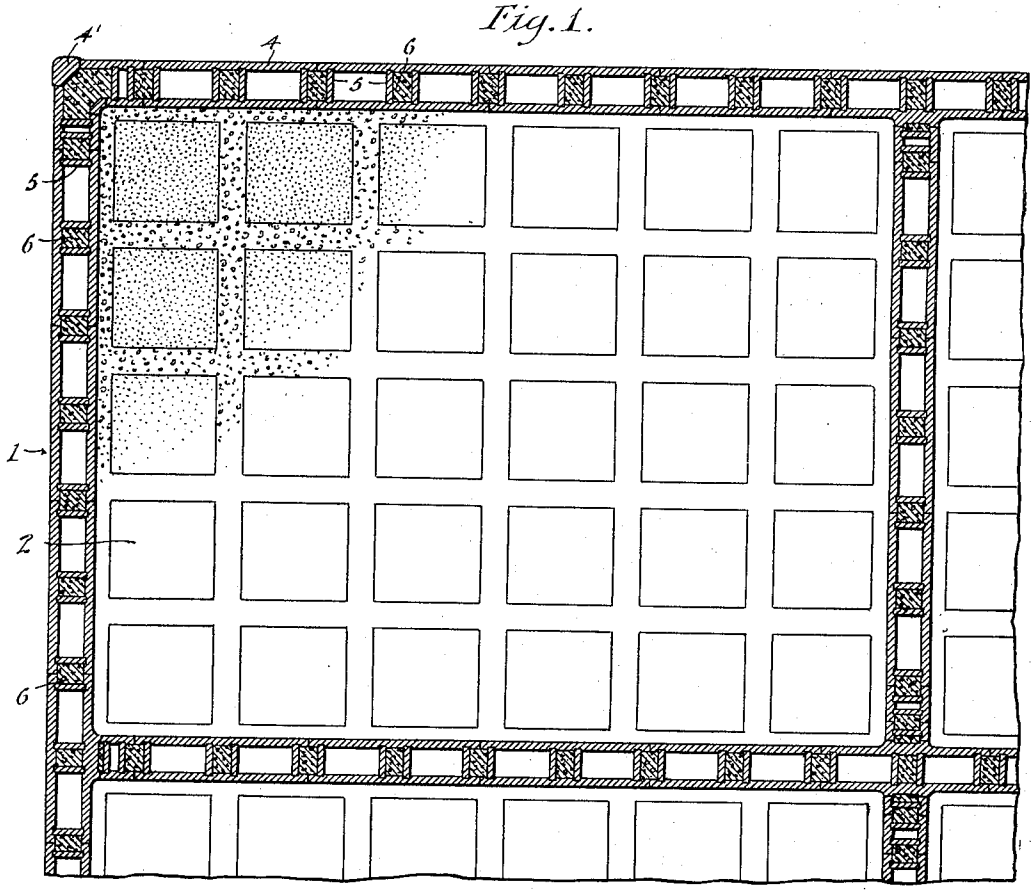
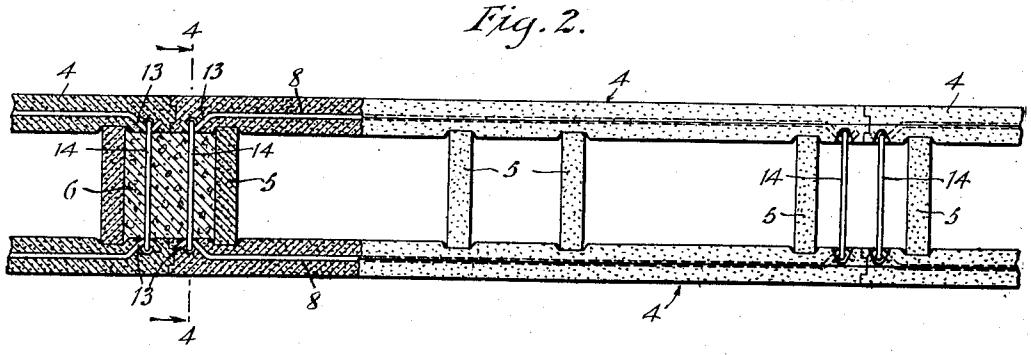


Fig. 2.



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BUILDING CONSTRUCTION

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Fig. 3.

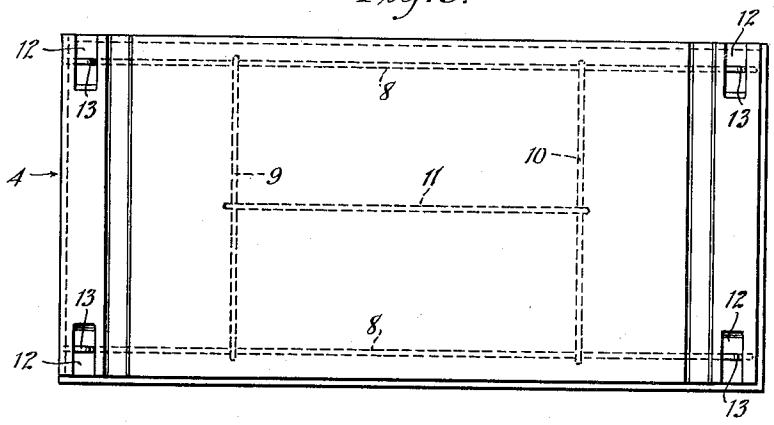


Fig. 4.

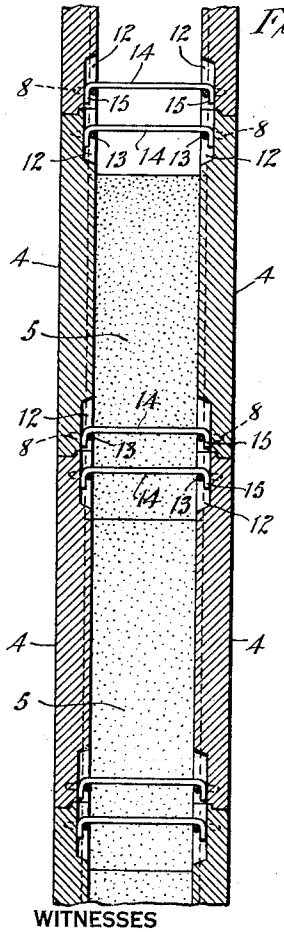


Fig. 5.

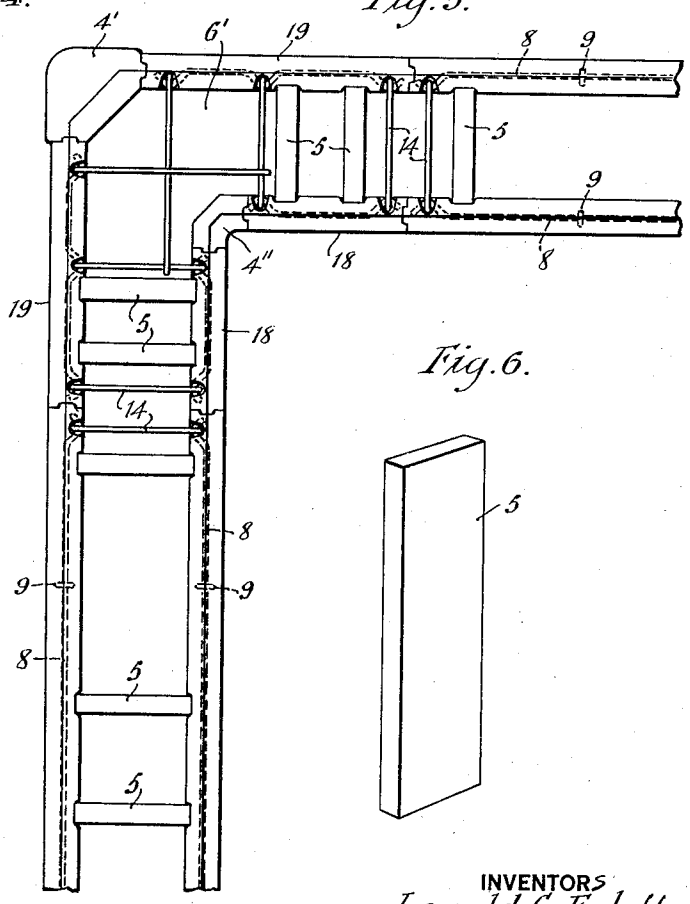


Fig. 6.

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BUILDING CONSTRUCTION

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Fig. 7.

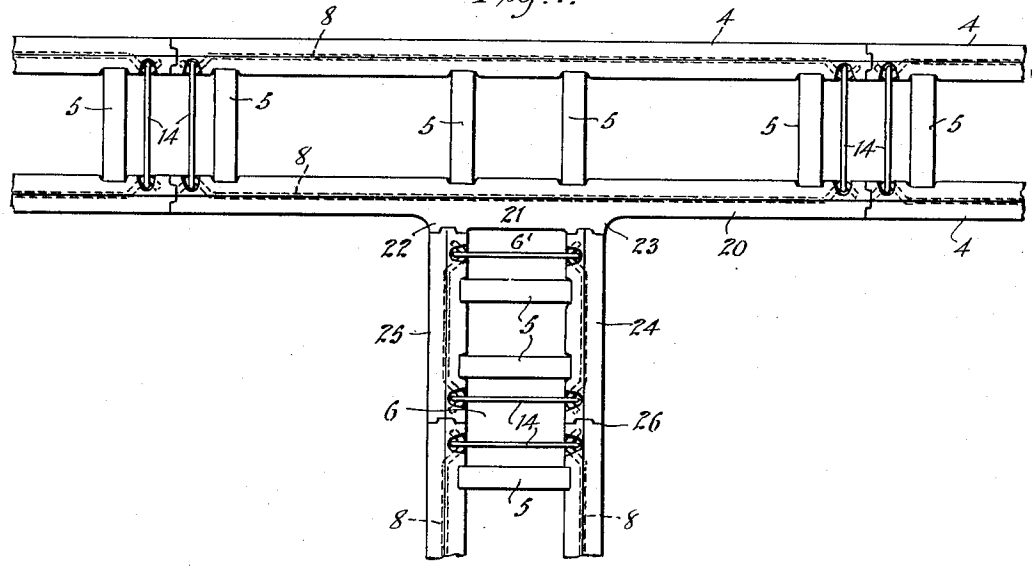


Fig. 8.

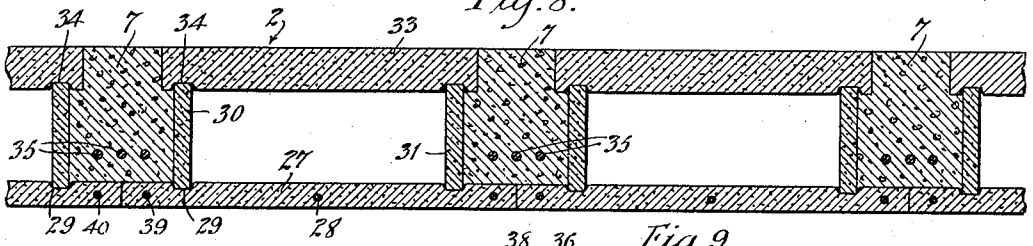
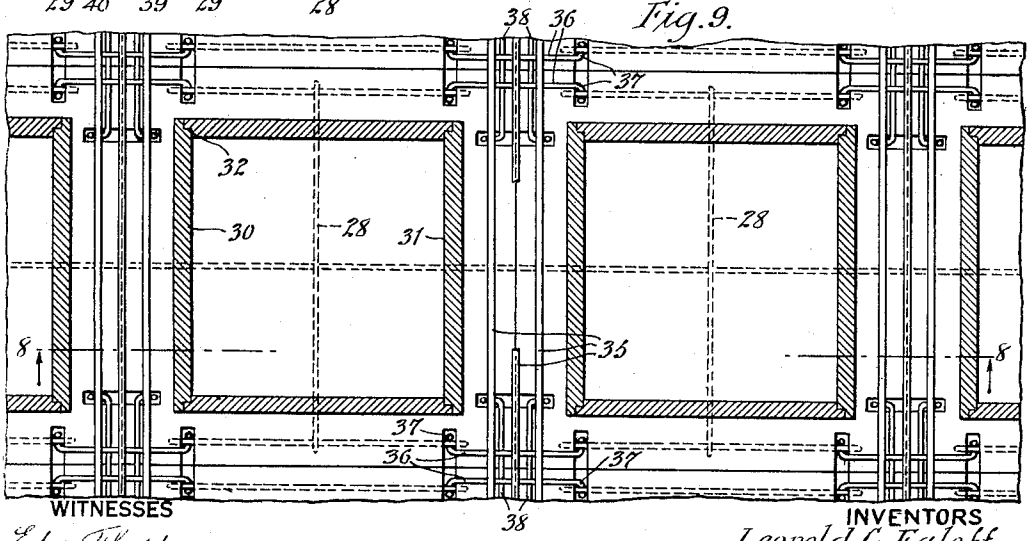


Fig. 9.



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BUILDING CONSTRUCTION

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Fig. 10.

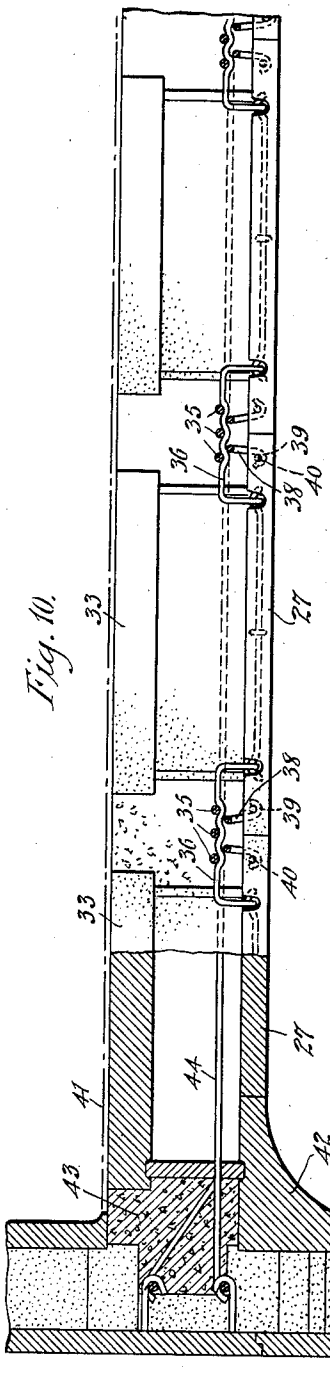
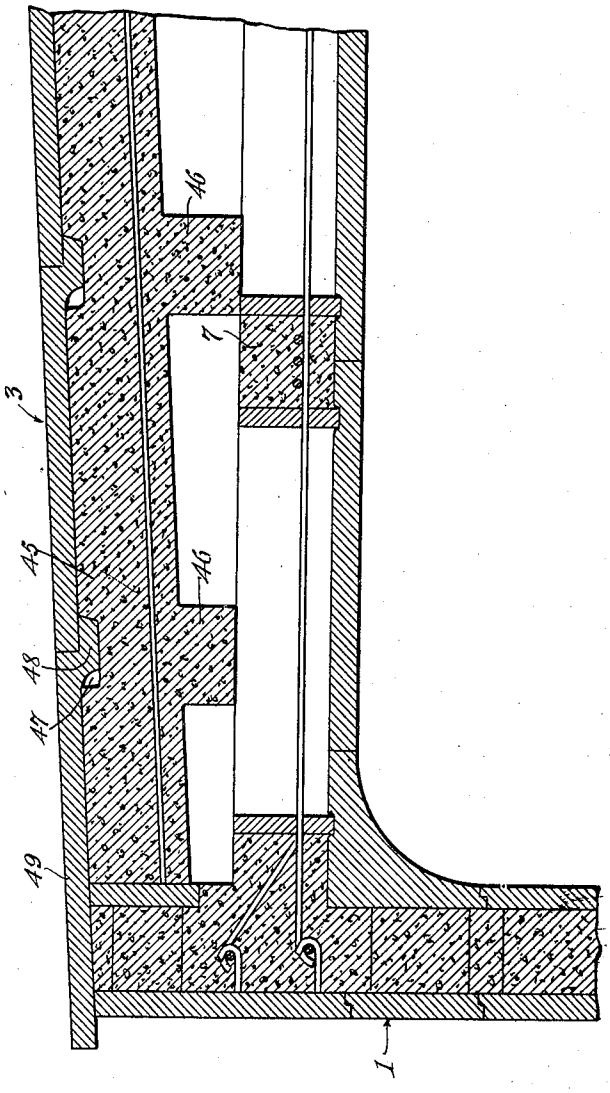


Fig. 11.



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Patented Sept. 10, 1935 2,014,315

UNITED STATES PATENT OFFICE

2,014,315

BUILDING CONSTRUCTION

Leopold C. Egloff and Walter L. Egloff,
Seattle, Wash.

Application April 12, 1934, Serial No. 720,299

1 Claim. (Cl. 72—1)

This invention relates to building structures and particularly to an improved wall construction, an improved roof construction, and an improved ceiling construction, all arranged to agree in general formation so that one part will readily coact and merge into the other part to make a complete construction.

An object of the invention is to provide an improved construction formed partly of cast concrete plates with suitable reinforcing and tying members, and cast beams or piers whereby a complete, strong structure is presented which will require a minimum amount of effort in building.

Another object of the invention is to provide a building structure with roof, ceiling and walls wherein concrete plates are used, the same being of a size that may be readily handled by one person.

A further object, more specifically, is the provision of an improved building structure for dwellings and other buildings which may be erected at a low cost, at the same time providing a strong concrete structure which is substantially fireproof and to a large extent proof against temperature changes.

In the accompanying drawings—

Figure 1 is a horizontal sectional view through part of a building disclosing a construction embodying the invention, the figure illustrating several walls in section and a top plan view of a flooring, the other side of which presents a ceiling;

Figure 2 is an enlarged top plan view of a wall similar to the wall shown in Fig. 1, a portion being broken away for better illustrating the construction, the wall being shown with all the parts in place except the concrete cast piers;

Figure 3 is an elevation of the reverse face of a building plate disclosing certain features of the invention;

Figure 4 is a sectional view through Fig. 2, approximately on the line 4—4;

Figure 5 is a view similar to Figure 2 but showing a corner structure;

Figure 6 is a perspective view of a spacer plate embodying certain features of the invention;

Figure 7 is a view similar to Fig. 2 but showing an arrangement whereby a partition joins the main wall;

Figure 8 is a sectional view through Figure 9 on the line 8—8;

Figure 9 is a top plan view of the ceiling shown in Figure 8, the flooring above and the beams being eliminated;

Figure 10 is a vertical sectional view through part of a building showing one of the vertical walls, with part of the floor and ceiling structures broken away to illustrate certain detailed features;

Figure 11 is a view similar to Figure 10 but showing the top of the wall structure merging into the ceiling and into the roof, illustrating certain features of the invention.

Referring to the accompanying drawings by numerals, 1 indicates a wall construction formed according to the present invention, and 2 a combined floor and ceiling structure. These two structures in connection with the roof structure 3, as shown in Figure 11, are all patterned along the same general inventive idea of providing panels or plates and reinforcing members associated with beams, whereby all parts are interlocked and held together in a way to substantially present an integral construction.

The wall structure 1, as shown in Figures 2 to 6, inclusive, is formed with a number of unit plates 4, a number of spacer plates 5, and a pier 6 cast between each pair of spacer plates, as illustrated particularly in Figure 1. The piers 6 are naturally vertical, while substantially the same idea is presented in the horizontal beams 7 where the combined ceiling and floor structure 2 is involved. Each of the unit plates 4 is formed with a reinforcing wire or rod 8 near each edge, as shown in Figure 3, and these wires or rods are reinforced by auxiliary wires or rods 9 and 10, the latter rods also being reinforced by the connecting rod 11. All of the rods 8 to 11, inclusive, are embedded substantially centrally in the plate 4. This plate is provided near the ends with cutouts or sockets 12, and in each of these sockets the respective rods 8 extend, said rods in each socket being bent to present an arc-shaped end 13 whereby the bonding rods 14 may function, said bonding rods having turned down ends 15 and 16 (Figure 4). As these bonding rods and the arc-shaped ends 13 are arranged in the spaces between the spacer plates 5, which in turn are arranged at the joints on adjacent unit plates, all these members will be embedded in one of the piers 6, whereby these members are held in operative position while they function to bond the inner and outer unit plates 4, and also act to reinforce the respective piers 6. By this method all the parts are tied together in an efficient manner.

From Figure 2 it will be observed that each of the plates 8 is provided with a tongue at one end and with a groove at the other end for receiving the tongue of the next adjacent plate. The meeting of the tongue and the groove is shown at the left in Fig. 2 and forms an interlocking structure, whereby the plates are accurately aligned and a good mechanical joint is secured when associated with the reinforcing rods and the pier 6. It will be observed from Figures 1 and 2 that a pair of spacer plates is arranged intermediate the ends of each pair of unit plates 4 so that these unit plates are reinforced by the

piers intermediate their length. When starting the construction of a wall the inner and outer plates 4 may rest on a suitable foundation, but the spacer plates are pressed downwardly a desired distance, say six or eight inches, so that their upper edges will be six or eight inches more or less below the upper edges of the first row of unit plates 4. When the second row of unit plates is placed in position, and a second batch of spacer plates, a structure will be presented whereby the second batch of spacer plates will tie the first row of unit plates to the second row. This is carried out throughout the entire wall as illustrated in Figure 4, for instance.

When forming a corner as shown in Figures 1 and 5, there is a special corner unit plate 4' on the outside, and a special corner unit plate 4'' on the inside. Also, the respective unit plates 18 and 19 are all of a special size though otherwise the construction is substantially the same. In order that there may be a pier 6' at the corner, a pair of spacer plates 5 are arranged at the center of each of the plates 18. It is to be noted that all of the spacer plates have their edges positioned in grooves formed in the various unit plates.

Where a partition is to be built and connected to the wall, a special construction is shown as illustrated in Figure 7 wherein the outside unit plate 4 is of the usual construction, while the inside unit plate 20 is of the same construction except that it is provided with a protuberance 21 having added extensions 22 and 23, each extension having a centrally positioned groove for receiving the tongue of the short unit plates 24 and 25, which unit plates are adapted to receive the spacer plates 5. In this case there is a single spacer plate 5 adjacent the joint 26 whereby the usual pier 6 may be provided. A special pier 6' is provided at the place where the plates 24 and 25 join the extension 21. In this way a strong, rigid structure is secured. It will be understood that though the spaces between the spacer plates shown in Fig. 7 are vacant, these will be filled with columns of cement or concrete when the wall is completed, as illustrated in Fig. 1.

In forming the combined floor and ceiling 2 the construction illustrated in Figs. 8 to 10 is provided. As illustrated in these figures the various ceiling plates 27 are preferably square and provided with separate reinforcing rods 28 and with a groove 29 forming a squared path for the reception of the bonding plates 30 and 31. These plates are rabbeted at the various corners as illustrated at 32 in Fig. 9 whereby when the beams 7 are cast these plates will not collapse. On top of these plates are positioned the floor plates 33 which have grooves 34 for the reception of the upper edge of these plates. It will be noted that the various beams 7 are provided with a number of reinforcing rods 35 which are preferably at the lower part of the beams and adjacent the various supporting and bonding rods 36, which latter rods have bent over hooks or ends 37. Transverse bonding rods 38 also have hooks 39 interlocking with the transverse rods 40. These various rods and hooks are shown particularly in Figure 9, from which it will be seen that there is a crossing of the bonding rods 36 and 38, said crossing being near the reinforcing rods 35, whereby all of these rods are embedded in some of the concrete of the beam 7. Thus the parts are all tied together and the desired support is provided for the various ceiling plates 27. It will be observed that the floor plates 33 extend beyond the various bonding plates 30, whereby when the beam 7 is cast there will be shoulders cast beneath the edges of the floor plates whereby strain passing from these plates will be transmitted directly to the beam 7 rather than to the ceiling plates. After the combined floor and ceiling structure has been built, as shown in Figs. 8 to 10 inclusive, a flooring 41 of any desired kind is applied to give a finished appearance. The inner surface of the wall 1 and the lower surface of the ceiling may be coated with plaster, paint or other material as preferred so as to cover the various joints between the various plates. In the construction of the combined floor and ceiling a special plate 42 is provided at the corner, said plate having a rounded end surface. Also, it will be noted that a beam 43 is arranged at the juncture of the flooring and the wall, and in this beam is anchored the ends of the various wires or rods 44. It will thus be seen that the various beams, except the beams 43, are anchored and reinforced by rods running in two directions.

When building the roof the wall 1 is formed in the usual manner as heretofore described, and also the ceiling structure. It will be noted from Figure 6 that the beams 7 extend from one side wall to the other, and also from one end wall to the other with the parts merging at the place where the various bonding wires or rods 36 and 38 are positioned, thus presenting a squared structure as shown in Figure 1. On certain of the beams 7 are placed forms which are to be removed later on, said forms being adapted to receive the concrete 45 which is cast in place. The concrete structure really consists of a number of inclined beams superposed on certain of the beams 7 and supported by the legs 46. In forming the various cast rafters 45 recesses 47 are formed and in these recesses the underlapping flanges 48 of the roof plates 49 are positioned. The roof plates 49 are preferably square and overlap at the recesses 47. If desired, the joint could be sealed with cement at the time the plates are placed in position or later. Also, if desired, the recesses 47 could be filled with green cement and then the flanges 48 forced therein with a thin layer of green cement on top of the plate so that when the next plate 47 is placed in position it will be cemented or sealed to the first plate. If this is carried out throughout the entire roof, the various plates will be cemented to the beam 45 and to each other and will present practically an integral structure and one that is absolutely sealed against the entrance of water.

We claim:

A building structure including a wall, a ceiling structure having longitudinal and transverse beams merging together, a plurality of rafter beams having legs resting on certain of the first mentioned beams, each of said rafter beams having spaced sockets, and a plurality of roofing plates, each roofing plate having a depending flange with an offset above the flange, said flanges being adapted to be placed in special sockets with one edge of one plate fitting into the offset above the flange of the next adjacent plate.

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