NEW METHOD OF GUNITE WALL CONSTRUCTION **REDUCES COST TO FIFTY CENTS** PER SQUARE FOOT

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ONE of the most interesting of the many new types of houses that are being developed to lighten the burden of the present shortage of lumber and brick, is that referred to in the report of the "Cement-Gun" Committee of the National Concrete Housing Association, which convened re-



FIG. 1-ONE MAN CAN RAISE PANELS-NOTE THAT FLOOR BEAMS EXTEND BEYOND 2 BY 6-IN. PLANK

cently in Chicago. The advantages that this house offers are:-

- 1. Rapidity and ease of construction. 2.
- Fireproof qualities.

3. Absolutely perfect insulation and protection against heat and cold.

- 4. Permanency.
- 5. Economy.

This house as finally developed is the evolution of several methods of construction that have met more or less favorable comment in the technical press for the past three or



FIG. 2-FRAME PRACTICALLY COMPLETE

four years, and its success is based on the knowledge gained by several years of actual test in cold and hot climates that "Gunite" (the sand and cement product of the "Cement-Gun") is a concrete which is impervious to moisture, and when placed in thin wall slabs is permanent. Being impervious to water and air, it is possible to develop the absolute dead air pockets which are a feature of this construction.

The intent of this mode of construction is to build up as a monolith a light, reinforced concrete frame of columns and girders, with the outer walls hung as a reinforced concrete curtain between them, all tied together in such way as to form not only the supports for the floors and roof, but

also so that the girders act as ribbon bands around the house, binding it together much as the hoops bind a barrel. The methods employed are as follows:-

While the foundations are being poured in the usual manner, short pieces of steel are left projecting at spaced intervals, preferably 4 ft., which later serve as dowel pins, to which are attached the steel reinforcing rods of the columns or studs. On top of the foundation is fastened a 2 by 6-in., laid flat and with the outer edge at 51/2 ins. back from the outer face of the wall. This timber in this way serves as a level support for the floor beams, and at the same time prevents the further necessity of lining up the forms when the floor beams are placed, and the ends extend from 2 to 4 ins. beyond the outer face of this timber. Fig. 1 shows this, and also shows the forms or panels, which are so light as to be easily handled by one man.

The details as shown in Fig. 5 will make it apparent that the form frames used are built up of the very lightest lumber (1 by 4-in. and 1 by 5-in.), and that their purpose when covered with the two-ply tar paper is only to act as a light backing against which the "Gunite" is to be shot,



FIG. 3-SHOWING DETAILS OF CONNECTION BETWEEN COLUMN AND GIRDER

and not as carrying members. They are usually made 3 ft. 8 ins. wide, so that when spaced with a 4-in. recess between them, the columns built up in these recesses will be 4 ft. on centres.

It is, of course, not always possible to follow this definite spacing, as the architectural details may not always so adapt themselves, but the intent and great advantage of this type of construction is that the panels shall be laid out and built up in advance to save field measuring and framing. In case of a number of houses of even different designs, it is possible to use only a few sizes of panels.

These panels are of such a height as to reach from the top of the foundation to 6 ins. below the bottom of the second floor joists, or from the top of these floor joists to 6 ins. below the bottom of the roof or ceiling rafters.

After having slipped the bottom planks of the form frame underneath the first floor beams until it is heeled against the outer edge of the 2 by 6-in., the frame is then plumbed and toe-nailed to the floor joists, insuring their permanency in location and stability. A 1 by 6-in. plank is then nailed to each frame across the back of the recess, thereby acting as

(a) A tie between the frames.

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