April 14, 1936. D. B. OLIVER 2,037,482

CONCRETE STRUCTURE

Filed July 6, 1935 2 Sheets-Sheet 1

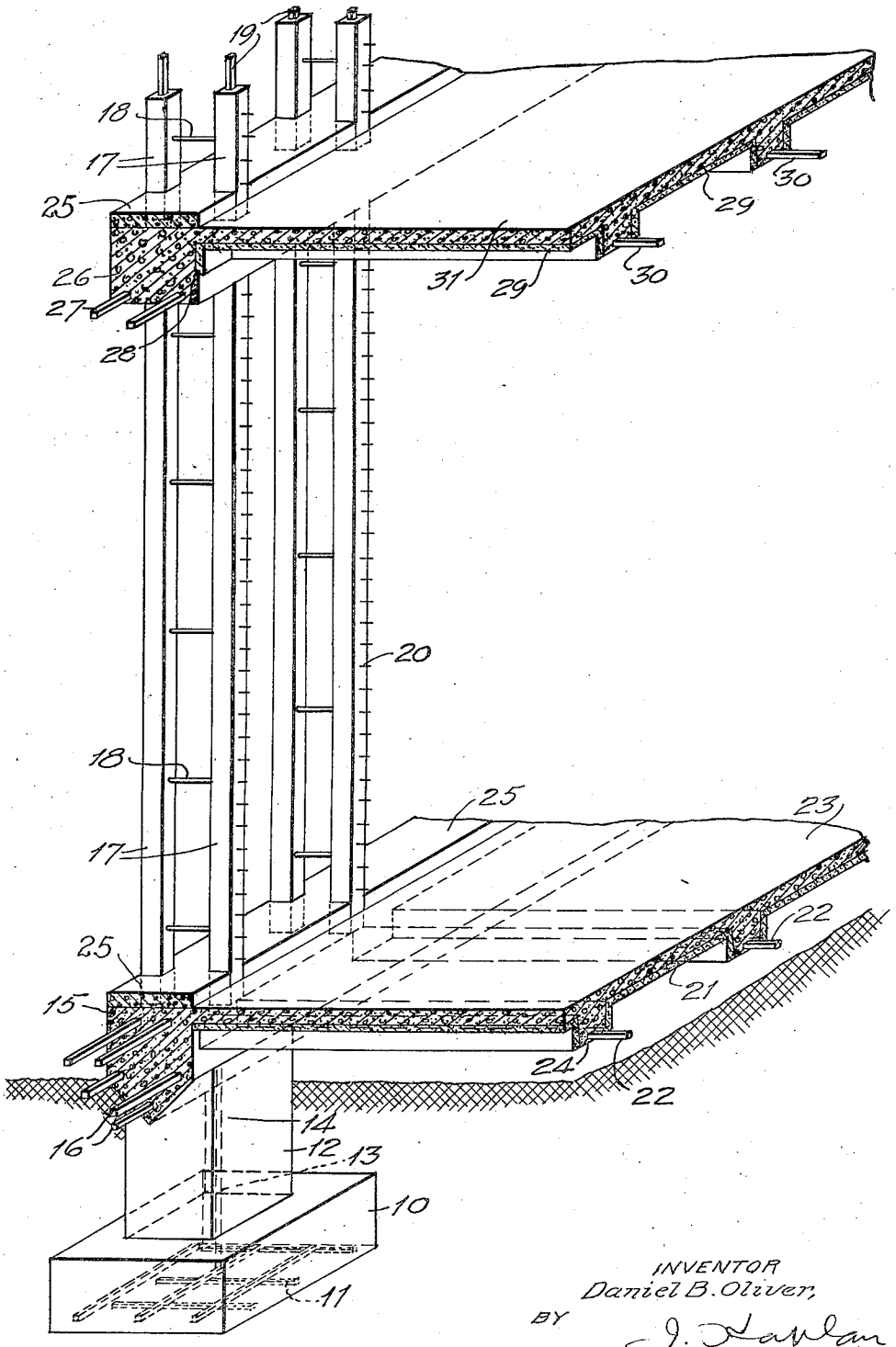


FIG-1-

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CONCRETE STRUCTURE

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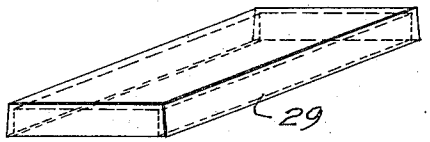


FIG. 3.

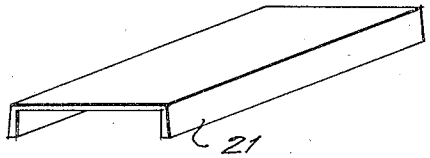


FIG. 2.

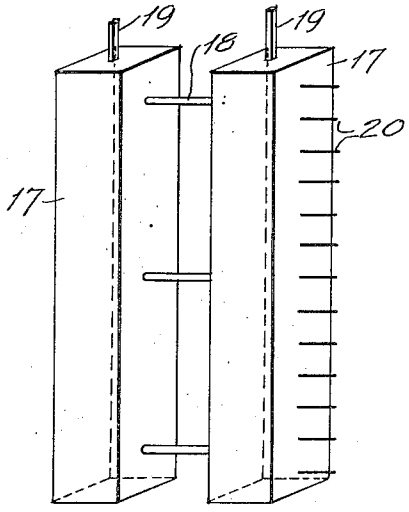


FIG. 4.

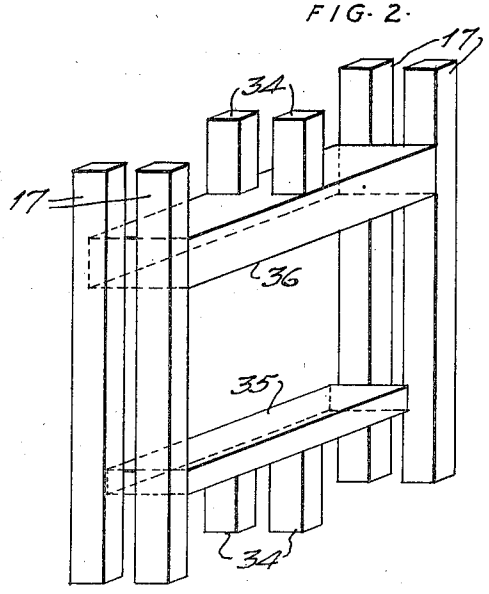


FIG. 5.

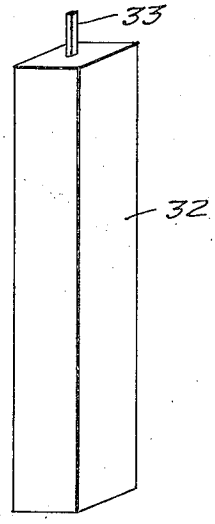


FIG. 6.

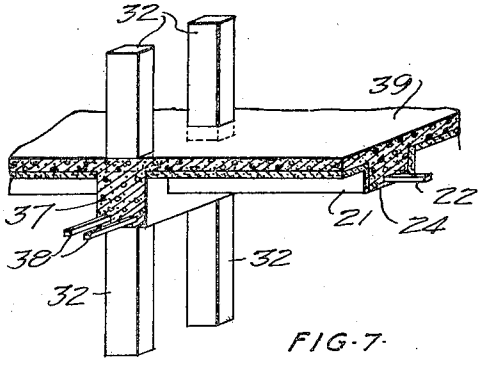


FIG. 7.

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CONCRETE STRUCTURE

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Application July 6, 1935, Serial No. 30,135

3 Claims. (Cl. 72—1)

This invention relates to concrete building structures such as dwelling houses and the like and has special reference to concrete structures in which much of the structure is precast.

One important object of the invention is to improve the construction of concrete buildings by providing precast members adapted to take the place of the expensive wooden or metal mold forms commonly used in erecting such structures.

A second important object of the invention is to provide an improved concrete building structure having precast structural elements of novel and improved construction.

A third important object of the invention is to provide, in such a structure, a novel and improved arrangement of precast concrete members adapted to form molds for the poured concrete part of the structure and to remain in place as efficient elements of the structure when the building is completed.

With the above and other objects in view, as will be presently apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Figure 1 is a perspective view, partly in section, showing a portion of a building under construction in accordance with this invention.

Figure 2 is a perspective view of a precast open ended pan or channel adapted for use as a form in floor construction, this channel being especially for use in constructing the lower floor.

Figure 3 is a perspective view of a second type of precast concrete pan adapted for use in forming ceiling, roofs and the like.

Figure 4 is a perspective view of a precast concrete double stud used in exterior and other thick walls in the improved structure.

Figure 5 is a perspective view of a window framing arrangement of precast concrete.

Figure 6 is a perspective view of a precast concrete stud adapted for use in the erection of interior walls and the like.

Figure 7 is a perspective view of a girder beam arrangement used in connection with precast studs and floor pans.

In the embodiment of the invention as herein disclosed it will be seen that the building is shown as having a footing 10 provided with the usual reinforcement 11. While but one footing is here shown it is to be understood that it is intended to provide a number of such footings spaced at suitable intervals. On each of the footings 10 there is provided a column 12 having vertical reinforcing 13 which extends below the column and enters the footing 10 to anchor the column firmly to the footing. These columns are provided at their upper ends with V-shaped notches 14 to receive and support a girder beam 15 having a V-shaped under side to fit in the notches 14 of the columns. The usual reinforcing 16 is provided for this girder beam. The girder beams 15 constitute the sills of the building. These parts may be constructed as precast concrete parts or forms may be erected in place and the concrete poured therein.

At spaced intervals along the beams 15 there are erected precast concrete double studs which are each formed of a pair of concrete posts 17 having tie bars 18 extending between the posts 17 with their ends cast in the posts. Longitudinal reinforcing 19 extends through these posts and wires 20 are embedded in one of the posts and project therefrom inwardly of the building to form means whereby metal lath may be secured to the posts. The lower ends of the double studs rest on the top of the girder beams 15.

For the lower floor pans or channels 21 are supported on suitable temporary blocking these pans being laterally spaced and the spaces between the pans being temporarily closed at the bottom. Reinforcing rods 22 are run through these spaces and a concrete floor 23 is now poured. This poured concrete floor will surround the lower ends of the double studs and hold them in place and the concrete which fills the spaces between the pans will form small reinforced beams or purlins 24. A further concrete ledge 25 may be poured on top of the girder beams 15 to surround the lower ends of the double studs 17 and prevent any lateral movement of the lower ends of said studs. Thus an efficient means is provided to firmly anchor the studs to the floors.

Resting on the upper ends of the double studs for this floor are girder beams 26 having reinforcing 27. These beams are each provided on its inner face with a shoulder 28 whereon may rest the end wall 29 of a pan 30 having closed ends. The pans 30 are spaced like the pans 21 and the spaces are temporarily closed at the bottom. In these spaces are arranged reinforcing rods 30.

On top of the girder beam 26 is erected a second set of double studs 17 and this floor 31 is then poured to surround the lower ends of the second set of studs.

If the girder beams are cast in place it is preferable that the floors be poured before the beams have set so that the floor and its beams will form an integral concrete structure.

Obviously each succeeding floor, if the house is more than one story high, will be constructed in like manner. It is also to be noted that the pans **29** may be either plain or ornamental so that the ceiling formed by these pans can be made to suit the architectural requirements in appearance.

It will be noted that this double stud and girder construction provides an ample air space in the outer building walls and that this wall space is closed at the top and bottom of each story so that rats, mice and other vermin cannot work their way up in the walls.

In Figure 6 is illustrated a single precast concrete stud **32** having reinforcing **33**.

In Figure 5 is illustrated a window framing in which double studs **34** are cut away at the window space so that a sill **35** and lintel **36** may be inserted.

Figure 7 shows the framing of an interior partition with studs **32** supporting a beam **37** having reinforcing **38**. This beam supports the channels **21** on which is laid the floor **39** surrounding the lower ends of the upper studs **32**.

There has thus been provided a novel and improved arrangement of the kind described and for the purpose specified. It is obvious that changes may be made in the arrangement of the details herein shown and described. It is not, therefore, desired to confine the invention to the exact structure here shown but it is wished to include all structures which come within the scope of the appended claims.

What is claimed, is:

1. In a concrete building structure, a beam, a series of precast concrete studs resting on the beam and projecting upwardly therefrom, and a concrete floor resting on the beam and surrounding the lower ends of said studs.

2. In a concrete building, a girder beam, a series of spaced double studs including a pair of spaced precast concrete posts and tie rods having their ends embedded in the posts and spanning the space between the posts, said double studs each being equal in width to the beam, said studs resting on said beam, and poured concrete covering the top of the beam and surrounding the lower ends of the studs.

3. In a concrete building, a girder beam, a series of spaced double studs including a pair of spaced precast concrete posts and tie rods having their ends embedded in the posts and spanning the space between the posts, said double studs each being equal in width to the beam, said studs resting on said beam, poured concrete covering the top of the beam and surrounding the lower ends of the studs, a shoulder extending along one side face of the beam, and precast floor pans held in inverted position on said shoulder.

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