May 18, 1937. C. C. MADSEN 2,080,618

STRUCTURAL UNIT

Filed Feb. 10, 1936 2 Sheets-Sheet 1

Fig. 1.

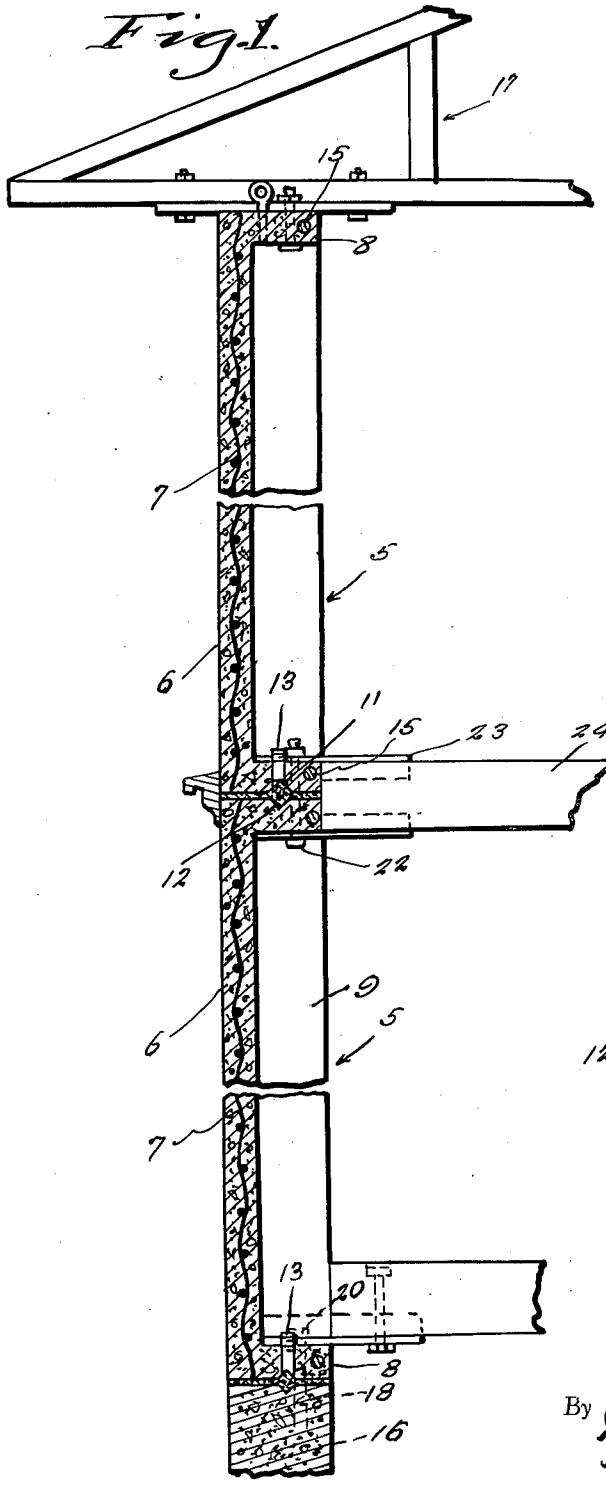


Fig. 2.

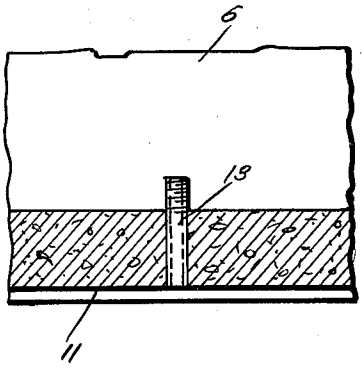
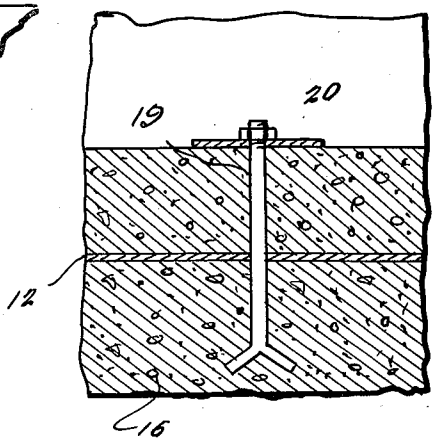


Fig. 3.



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May 18, 1937. C. C. MADSEN 2,080,618

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Filed Feb. 10, 1936 2 Sheets-Sheet 2

Fig. 4.

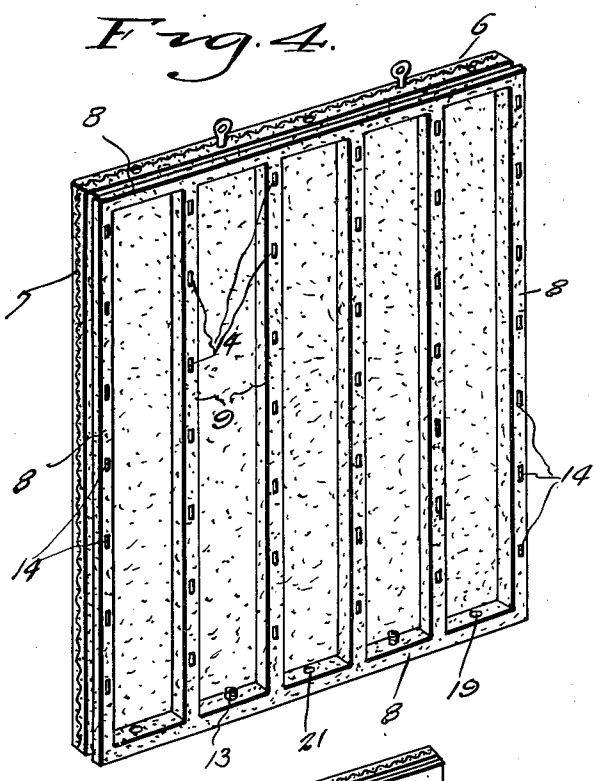


Fig. 5.

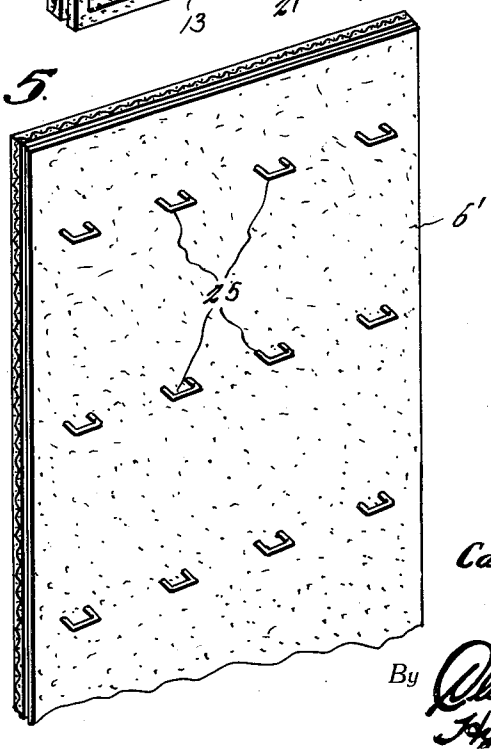
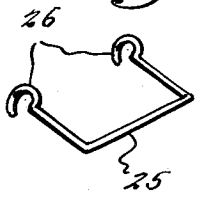


Fig. 6.



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2,080,618

UNITED STATES PATENT OFFICE

2,080,618

STRUCTURAL UNIT

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Application February 10, 1936, Serial No. 63,231

2 Claims. (Cl. 72—40)

This invention relates to structural units and more particularly to structural units of reinforced concrete.

An object of the present invention is to provide pre-cast reinforced concrete structural units which may be used for building walls or the like.

An object of the present invention is to provide a pre-cast concrete building or wall unit which can be constructed at minimum cost thereby tending to reduce materially the cost of constructing houses and the like.

A further object of the invention is to provide a pre-cast structural wall unit so equipped as to provide an air space after the inside wall finish has been applied to the unit.

A further object of the invention is to render it possible to pre-cast story high sections or units which may be transported to the place of use and which may be used upon previously constructed foundation.

The invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is a longitudinal sectional view taken through portion of a wall embodying the features of the present invention.

Figure 2 is an enlarged fragmentary detail sectional view taken at the base or large edge of one of the units.

Figure 3 is an enlarged detailed sectional view showing the manner of anchoring two of the units together.

Figure 4 is a perspective view of one form of pre-cast unit.

Figure 5 is a similar view of a slightly modified form of unit, and

Figure 6 is a perspective view of a projection member adapted to be used with the type of wall unit shown in Figure 5.

In accordance with the present invention an entire wall may be constructed from one or more pre-cast reinforced concrete units involving the features of the present invention.

In Figure 1 is illustrated the manner of forming a wall from two units involving the features of the present invention and which units are indicated generally by the reference numerals **5**.

In the form of the invention shown in Figures 1 to 4 inclusive unit **5** consists of a slab or body **6** formed of concrete and preferably metal reinforced as at **7**. Also the slab **5** has an integral concrete rim **8** extending along all four sides thereof and projecting from one face of the slab.

Laterally spaced additional ribs **9** of concrete are also provided on said one face of the slab **6** and extend between opposed portions of the rim **8**. The ribs **8** and **9** will provide, after the inside wall finish has been applied to the rim and rib equipped side of the slab **6** air spaces for snsulation purposes.

Further in accordance with the present invention the rim **8** of the slab on three or four sides thereof, as determined by whether the slab is to be used as a lower slab or a top slab, or whether a single slab is to be used in the construction of a single wall, is provided on the outer surface thereof with a continuous groove **11** to receive the mortar or other binding material **12** used in anchoring and binding together two slabs as suggested, for example, in Figure 1.

Also the rim **8** at one edge of the slab **6** has suitably embedded therein, and as best shown in Figure 2 nipples **13** having upwardly projecting externally threaded or plain ends to which conduits may be connected for forcing the motar or other binding material through the nipples and into the grooves **11** as is thought to be apparent.

The vertical portions of the rim **8**, as well as the rib **9** are also provided with recesses **14** if desired for the reception of wooden blocks or the like to facilitate securing of the inside wall finish to the building units.

The rim **8** on all four sides of the slab is preferably reinforced by rods **15** as best shown in Figure 1.

When using a pair of slabs **5** as shown in Figure 1 for constructing a wall the lowermost slab **5** is placed on the concrete foundation **16** while the uppermost slab **5** rests on the upper side edge of the lower slab **5**, the upper slab **5** also supporting the roof rafters **17** as shown.

When a pair of units **5** are used tie bolts **18** have split ends anchored in the concrete body of the foundation **16** and these bolts **18** extend through openings **19** provided in the lowermost flange or rim **8** of the lowermost slab **5**. Nuts or the like **20** are threaded engaged with the upper ends of the tie bolts **18** for securing the slab to the foundation.

At the meeting edges thereof the slabs **5** have contiguous rim portions **8** provided with suitable openings **21** to accommodate additional bolts **22** which latter may also be used for securing the angle bars or the like **23** thereto, the angle bars being used for securing joists and the like **24** to the wall formed by the slabs **5**.

It will thus be seen that one or more pre-cast

concrete slabs **5** may be used in forming the exterior wall of a house or other suitable building.

If desired the pre-cast reinforced concrete slab may, as shown in Figure 6, be provided without a rim or ribs, the faces of the slab being perfectly plain as shown in Figure 5 wherein the slab is indicated by the reference numeral **6'**.

In this second form of the invention in lieu of the aforementioned ribs slab **6'** has projecting from one side thereof substantially U-shaped projections **25** arranged in transverse and vertical rows as shown.

The projections **25** are in the form of wires bent into substantial U's and each of the U-shaped projections has the sides thereof at their terminals bent to provide hooks **26** which are embedded within the material of the slab body **6'** and are hooked into the metallic reinforcement of the slab body.

Having thus described the invention, what is claimed as new is:

1. A building unit comprising a reinforced concrete slab having projecting from one side thereof a reinforced integral concrete rim, said rim being provided externally with a continuous groove and hollow nipples extending through the rim and communicating with the groove to provide a conduit for feeding liquid bonding material to the groove.

2. A building unit comprising a reinforced concrete slab having projecting from one side thereof a reinforced integral concrete rim, said rim being provided externally with a continuous groove, and hollow nipples extending through portions of said rim, said nipples terminating at their inner end at the groove, and having outer ends projecting inwardly from said rim to form a conduit for feeding liquid bonding material to the grooves.

CARL C. MADSEN.