Sept. 21, 1937. P. CARILLI 2,093,401

CEILING MOLD FORM

Filed May 21, 1936 2 Sheets-Sheet 1

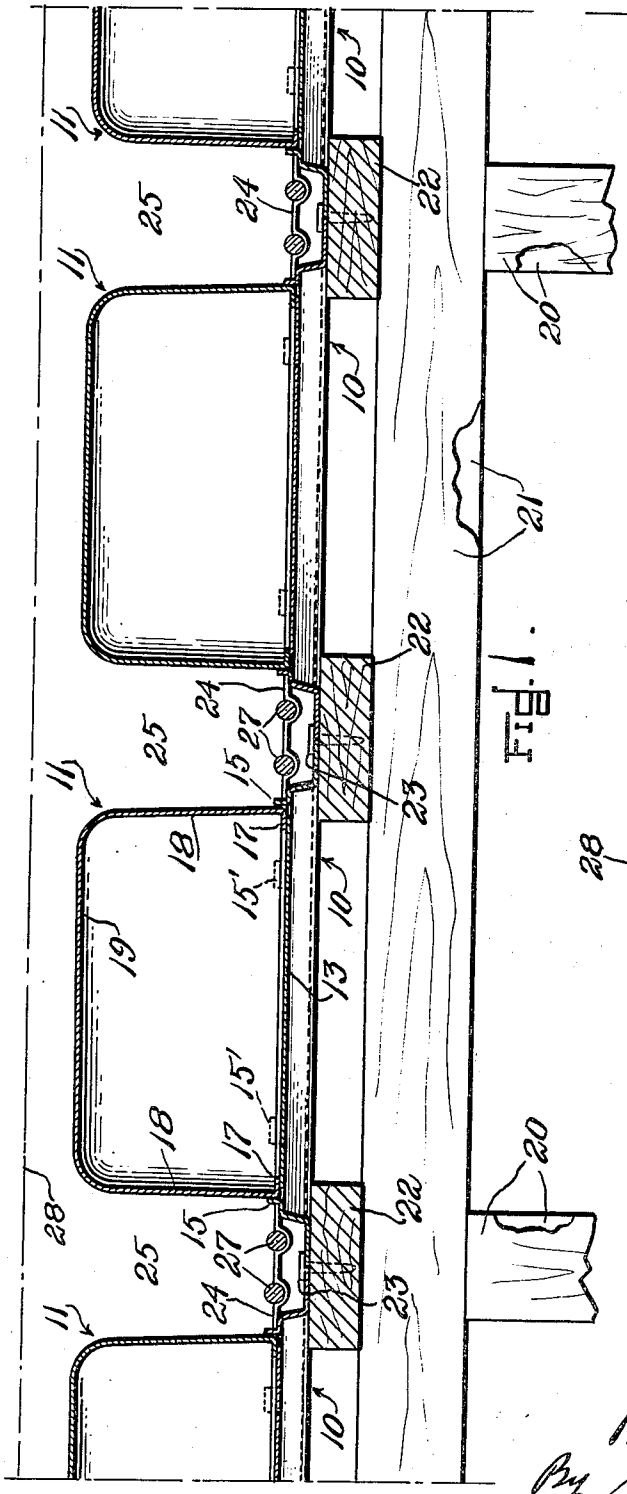


Fig. 1.

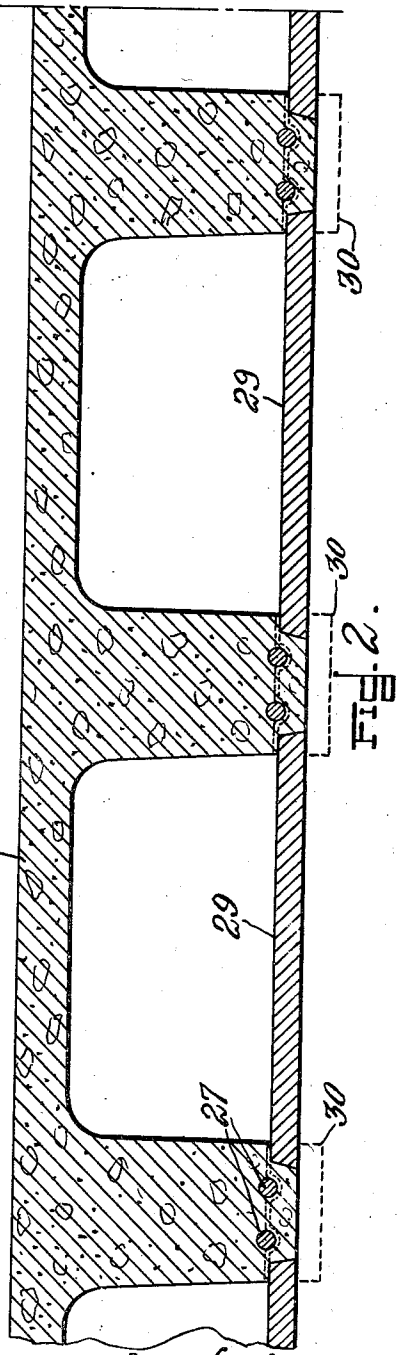


Fig. 2.

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Fig. 4.

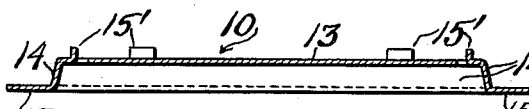
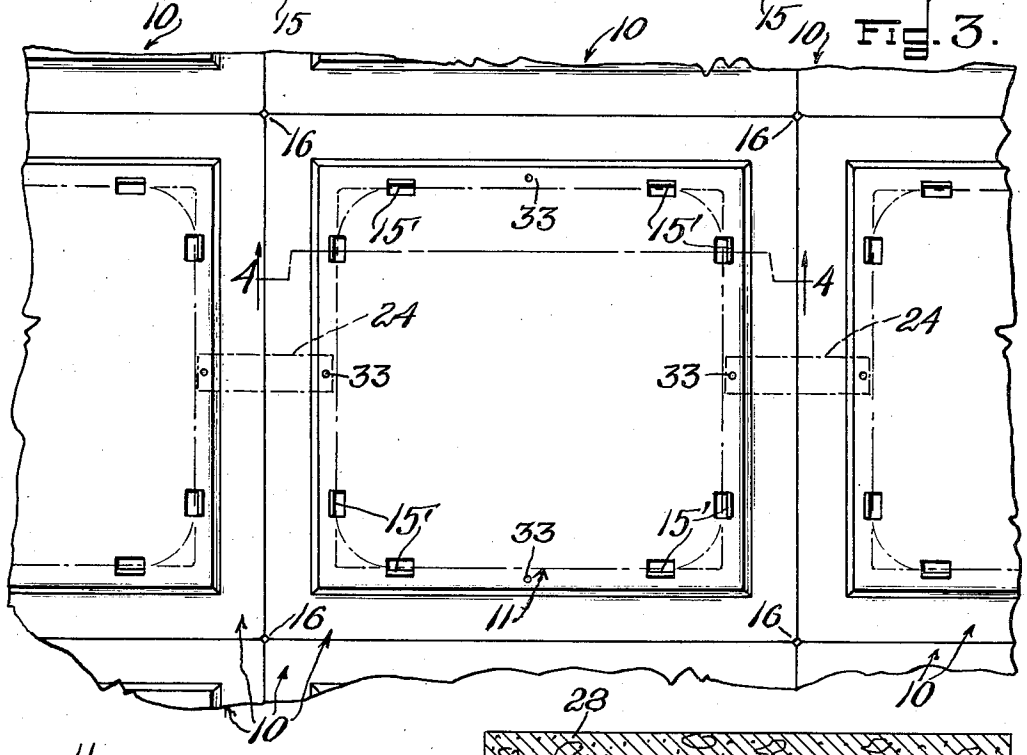


Fig. 3.



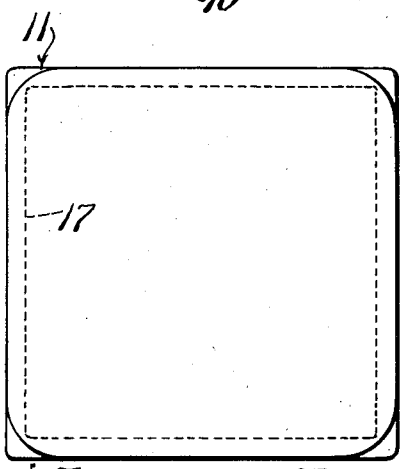


Fig. 5.

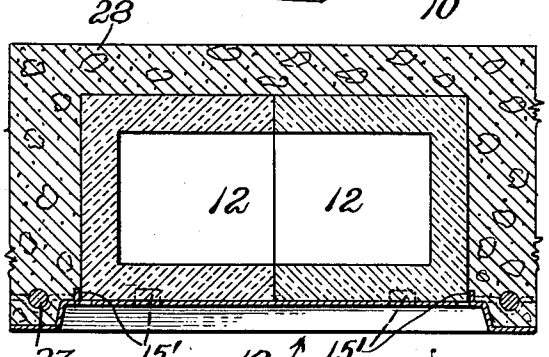


Fig. 7.

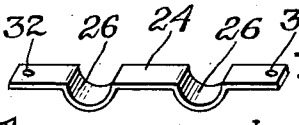


Fig. 6.

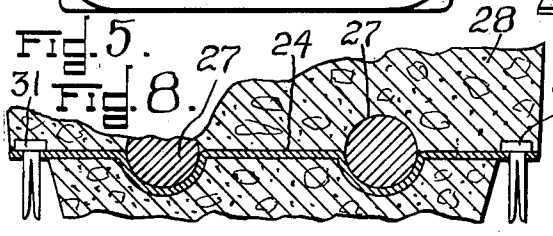


Fig. 8.

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UNITED STATES PATENT OFFICE

2,093,401

CEILING MOLD FORM

Pasquale Carilli, Milton, Mass.

Application May 21, 1936, Serial No. 80,939

6 Claims. (Cl. 25—131.5)

My invention relates to forms for use in molding poured concrete ceilings and floors such as are made with two sets of ribs or beams disposed at right angles to each other.

The invention has for its object to provide an improved molding form of the class referred to and also to provide an improved mold form or tile unit for use in constructing ceilings and floors of the class described.

To these ends I have provided the improved form and tile unit therefor as set forth in the following description, the several novel features of the invention being separately pointed out and defined in the claims at the close thereof.

In the accompanying drawings:—

Figure 1 is a vertical sectional view of a mold form structure constructed in accordance with this invention.

Figure 2 is a vertical sectional view of a ceiling produced by use of the mold form structure shown in Fig. 1.

Figure 3 is a top plan view of the mold form shown in Fig. 1 with the upper sections of the tile units, hereinafter referred to, removed.

Figure 4 is a section on line 4—4 of Fig. 3 through the base section of one of the tile units hereinafter referred to.

Figure 5 is a top plan view of the upper section of the tile unit hereinafter referred to.

Figure 6 is a perspective view of one of the chairs hereinafter referred to.

Figure 7 illustrates a modified form of mold unit.

Figure 8 illustrates another form of chair and is hereinafter described.

In constructing beamed concrete ceilings, or combined ceilings and floors, it has been common practice to erect a temporary wooden structure including a flooring at its top on which were arranged a multiplicity of tiles on to and around which the concrete was poured, said tiles being disposed in two sets of separated rows at right angles to each other so as to provide the under side of the ceiling with two sets of concrete beams likewise disposed at right angles to each other. Usually the tiles referred to were permanently embedded within or inseparably associated with the concrete of the finished structure.

My invention provides a tile or form unit comprising a rectangular sheet metal base section 10 and a hollow upper section which may be a sheet metal dome or cup-shaped element as shown at 11 in Fig. 1 or which may consist of two blocks 12 made from cinder, slag or equivalent material, as shown in Fig. 7.

The sheet metal base section 10 is pressed or molded so as to provide the same with a flat elevated and preferably rectangular horizontal top wall 13, Fig. 4, bordered by four downwardly and outwardly sloping side walls 14, and with a rectangular outwardly extending horizontal marginal flange 15 at the bases of the side walls 14.

The top wall 13 of base 10 is made with a plurality of upstanding lugs 15′ disposed adjacent to, but spaced inwardly a short distance away from, the four sides of said top wall so as to closely surround the lower portion of the upper section 11 of Fig. 1, or 12—12 of Fig. 7. These lugs may conveniently be provided by striking up portions of the top wall 13 as shown.

At each corner thereof the flange 15 is cut away slightly as at 16, Fig. 3, for a purpose which will appear later.

The upper section 11 of the tile or form unit may also be made from sheet metal and is of inverted cup-shape, the chime or bottom thereof being provided with an inwardly extending flange 17 to seat flatwise on the top wall 13 of base section 10 just inside of the lugs 15′ by which it is surrounded. It will therefore be clear that the lugs 15′ accurately position the upper section 11 and securely hold the same against displacement when the concrete is poured.

In order to provide for removal of the upper section 11 from the ceiling after the concrete has set the four side walls 18 thereof are made to slope downwardly and outwardly from the top wall 19 of said section, while the sloping side walls 14 of the base section 10 provide for removal of the latter from the completed ceiling. Thus my new unit as illustrated in Figs. 1 to 6, inclusive, does not form a permanent part of the ceiling and can be used repeatedly in constructing other ceilings.

In constructing a ceiling by means of a number of units constructed as above described a wooden form-supporting structure is erected upon the floor below the proposed ceiling, and as shown in Fig. 1 this structure may comprise a plurality of posts 20 to the upper ends of which are secured stringers 21. The posts 20 and stringers 21 may be made from lumber measuring 3″ x 4″, for example.

On top of the stringers 21 are provided other transversely disposed stringers 22 which are uniformly spaced apart a distance equal to the overall width of the base section 10 of the above de-

scribed tile or form unit. These stringers 22 may be made from lumber measuring, for example, 2'' x 6'' in cross-section.

A number of tile units are then assembled in position upon the stringers 22 with the edges of their flanges 15 abutting as shown in Figs. 1 and 3. These units are relatively disposed in two sets of parallel rows which are at right angles and when thus assembled the cut-away corners 16 of the edges of the flanges 15 provide small apertures as shown in Fig. 3 through which nails 23, Fig. 1, are driven into the stringers 22 thereby fixing the units in position thereon.

Thus the nails 23 hold the base sections of the units against displacement on the stringers 22 while the lugs 15' position the upper sections 11 on the lower sections and hold the same against displacement thereon.

After the molding form is thus assembled upon the temporary supporting structure a number of reinforcement-supporting chairs 24 are placed in position across the lower portions of a plurality of beam-forming channels 25 now existing between adjacent units, one end of each chair resting upon the outer marginal portion of one base section 10 and its other end resting upon the outer marginal portion of the opposite base section.

Each chair may consist of a metal strip shaped to provide two pockets 26 upon its top side, Fig. 6, each adapted to be occupied by a metal reinforcing bar 27. These bars are thus supported by the chairs so that when the concrete is poured they are surrounded by the latter.

The concrete 28 is now poured or otherwise deposited upon the molding form made up of the assembled units 10—11 to the desired depth which usually is proportionate to the load the ceiling structure is to support. When the concrete is set the temporary wooden supporting structure 20—21—22 and the tile sections 10 and 11 are removed leaving a reinforced cellular concrete ceiling structure as shown in Fig. 2.

The removal of each unit leaves a recess or pocket which is countersunk at its outer lower open end, said countersink being adapted to receive within it a panel 29 of acoustical board, mill board or other suitable material which is secured in position therein by cement or otherwise.

When the base section 10 of the unit shown in Fig. 7 is removed the upper section 12, 12 thereof remains permanently incorporated within the ceiling structure and may be covered and hidden from view by a panel such as 29, Fig. 2, fixed in position within the countersink vacated by the base section.

When the above described mold unit is removed from the finished ceiling the opposite end portions of each reinforcement-supporting chair 24 are exposed and accessible at the shoulders produced by the countersinks into which said ends extend and if desired these portions may be provided with threaded apertures as shown in Fig. 6 or otherwise adapted to coact with fastening devices by means of which the panels 29 are secured in position within the countersinks.

If desired molding strips indicated by dotted lines at 30, Fig. 2, may be fixed in position by means of nails driven therethrough and into panels 29 so as to cover the joints between said panels and the beams of the ceiling.

The chair 24 illustrated in Fig. 8 is likewise formed with an aperture near each end thereof, like the apertures 32 of Fig. 6 except that they need not be threaded, and when the chairs 24, Fig. 8 are placed in position on the base sections 10 of the form as indicated by broken lines in Fig. 3, the apertures of each chair are registered with the two oppositely disposed apertures 33 provided through the top walls of the two base sections by which the chair is supported and a split self-clinching nail 31 is placed in position within each registering pair of apertures.

It will therefore be clear that when the ceiling is finished and the form elements or units are removed the split shanks of the nails 31 are permanently and rigidly held in position within the countersink by the chair and by the cement in which their heads are embedded.

These nails are provided to hold the panels 29 in position within the countersinks, each panel being driven into its countersink so that it is impaled upon the nails 31 of the latter, and the shank of each nail spreading and clinching itself within the material of the panel as the latter is driven into position.

The flange 17 of the upper section serves mainly to reinforce and stiffen the side walls of the latter, but it also is useful as means by which the upper section can be forcibly removed from the finished ceiling.

What I claim is:

1. A mold unit of the character described comprising a base section of relatively small height and also of relatively large area as viewed in plan for forming a panel-receiving countersink in the ceiling from which it is removable when the ceiling is finished, said base section consisting of a single piece of sheet metal pressed to provide the same with a rectangular outer marginal flange, with an elevated flat top wall having upstanding positioning lugs adjacent to its outer marginal portion and with side walls connecting said top wall and flange which slope upwardly and inwardly from said flange to said top wall to afford draft for the removal of said base section from the finished ceiling and an upper section separably supported by said base section and positioned relatively thereto by said upstanding lugs.

2. A mold unit of the character described comprising a base section of relatively small height and also of relatively large area as viewed in plan for forming a panel-receiving countersink in the ceiling from which it is removable when the ceiling is finished, said base section consisting of a single piece of sheet metal pressed to provide the same with a rectangular outer marginal flange, with an elevated flat top wall and with side walls connecting said top wall and flange which slope upwardly and inwardly from the latter to said top wall to afford draft for the removal of said base section from the finished ceiling, and an upper section separably supported by said base section consisting of a single piece of sheet metal pressed into the form of a dome that is tapered from its base to its top to afford draft for removal thereof from the finished ceiling, the chime of said dome resting on the elevated top wall of said base section, and means for positioning said upper section on said base section and for holding said sections against relative displacement laterally when the concrete is deposited on said unit.

3. A mold unit of the character described constructed in accordance with claim 2 wherein said upper section is made at its base with an inwardly extending flange for use in removing said upper section from the finished concrete structure.

4. A mold for use in constructing cellular con-

crete ceilings and floors, said mold consisting of a plurality of mold units arranged side by side each in abutting relationship on all sides thereof with the units by which it is surrounded so that said units collectively provide a complete horizontal support for the concrete, each of said units comprising a sheet metal base section of relatively small height and also of relatively large area as viewed in plan for forming a shallow shouldered panel-receiving countersink in the concrete structure from which it is removable when said structure is finished, said base section being made with an angular marginal flange to abut the corresponding flanges of the base sections of the adjacent surrounding units and with side surfaces which extend upwardly from said flange to a flat top surface provided on said base section, and a hollow upper section seated upon said flat top surface and of relatively greater height but smaller in area as viewed in plan than said top surface; lugs projecting upwardly from said flat top surface separably and telescopically engaging said upper section to position the latter and hold the same against lateral displacement in any direction on said base section when the concrete is deposited upon the mold, and means for supporting said units from below.

5. A mold for use in constructing cellular concrete ceilings and floors said mold being constructed in accordance with claim 4 and including reinforcement-supporting chairs each consisting of a bar resting at its one end upon the marginal portion of the flat top surface of one of said sections and at its opposite end upon the marginal portion of the flat top surface of an adjacent base section.

6. A sheet metal mold section formed with a flat rectangular marginal flange bordering an upstanding wall which extends throughout the circuit of said flange and said upstanding wall bordering a flat top wall that is parallel with said flange, said top wall being made with upstanding lugs near its outer limits to telescopically engage with an upper mold section thereby to hold the latter against displacement laterally in any direction while the concrete is being deposited upon said section, a multiplicity of said sections being adapted to be arranged side by side with the flange of each in abutting relationship with the flanges of the sections by which it is surrounded so that said sections collectively provide a complete support for the concrete.

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