Aug. 17, 1926. 1,596,284

N. L. MALMGREN

FORM FOR LAYING CONCRETE FLOORS

Filed Dec. 15, 1925

Fig. 1.

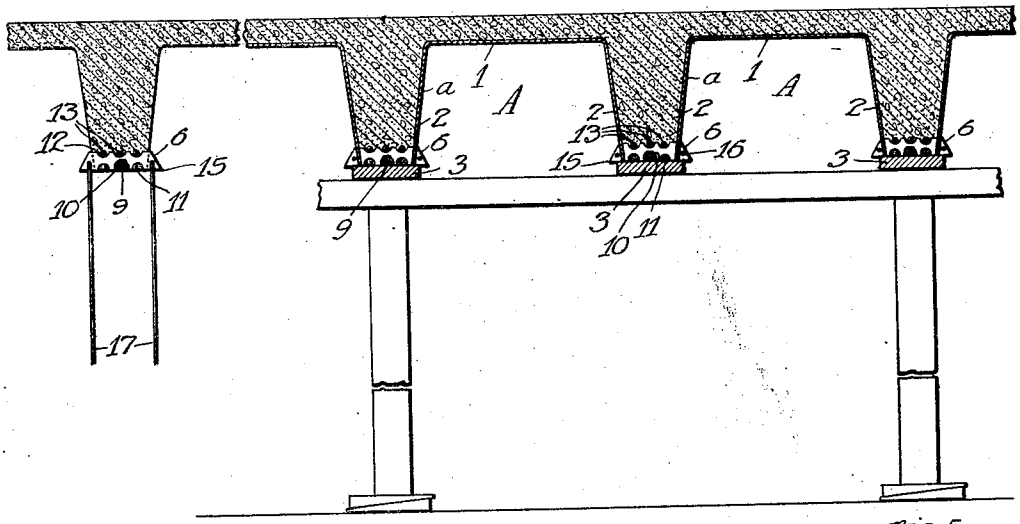


Fig. 2.

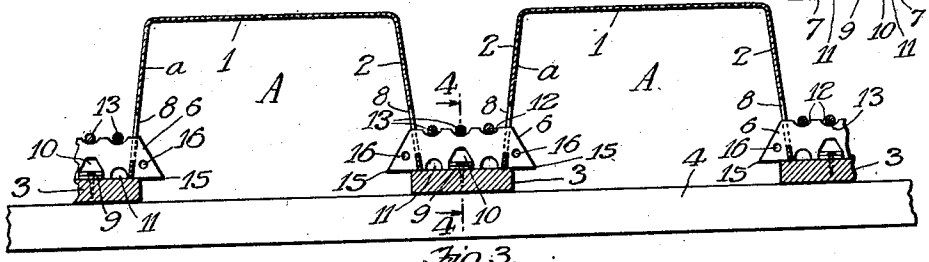


Fig. 5.

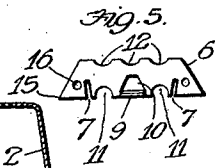


Fig. 3.

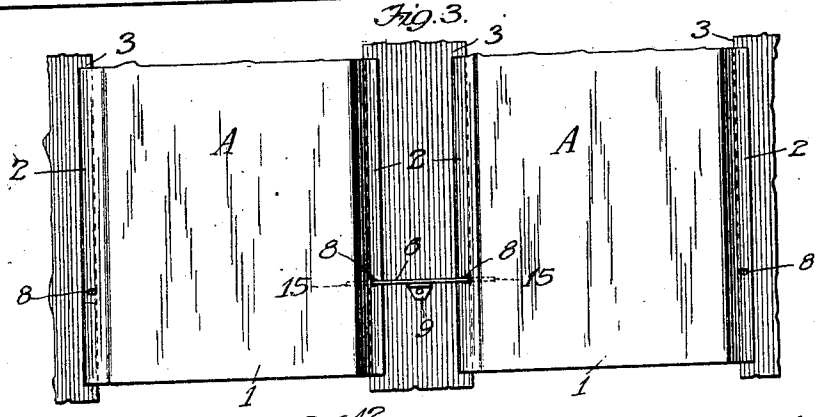
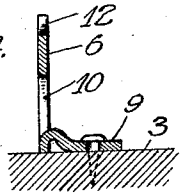


Fig. 4.



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UNITED STATES PATENT OFFICE.

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FORM FOR LAYING CONCRETE FLOORS.

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This invention relates to forms for laying concrete floors, and has particular reference to forms for laying concrete floors comprising beams, in situ.

At the present time, as is generally well known, forms for laying concrete floors reinforced by beams are used to a large extent, comprising what are generally known and referred to in the trade as "pans", said pans being made of sheet metal and consisting of flat intermediate portions which form the deck on which the floor is laid, and depending marginal flanges, said pans being supported by planks to which the lower edges of adjacent flanges of adjacent pans are secured in spaced relation, said flanges defining the beam portions of the floor and said planks closing the bottoms of the spaces between the flanges of the pans which rest thereon respectively.

The principal object of the present invention is to provide improved means for securing the flanges of pans of the kind specified to the boards or planks by which they are supported, which will be simple, strong and durable; which may be utilized as a support for reinforcing bars to be embedded in said beams; and which, also may be utilized for supporting suspended or false ceilings, now largely used.

To effect the object thereof, a form embodying my invention and improvements, comprises the various features and details of construction hereinafter described and claimed.

In the accompanying drawings, in which my invention is fully illustrated:—

Figure 1 is a sectional elevation of a form embodying my invention and improvements, shown at the right, as erected for laying a floor comprising reinforced concrete beams, and showing at the left a section of floor and beam with the form removed.

Figure 2 is an enlarged fragmentary sectional view of my improved form as erected for use preparatory to laying the floor.

Figure 3 is a top plan view of the parts shown in Fig. 2.

Figure 4 is a detail sectional view on the line 4—4 of Fig. 2; and

Figure 5 is a detached view of a tie-plate for connecting adjacent pans in spaced relation.

Describing the invention with particular reference to the drawings, A designates the form as a whole, comprising a plurality of pans *a*, each comprising an intermediate flat portion 1 and depending marginal flanges 2, and a bottom board 3, on which the lower edges of adjacent marginal flanges 2 of adjacent pans *a* rest, the relation being such that the marginal flanges resting on each board will define a space corresponding to the desired size and shape, in cross sections, of the floor beams.

As the form is erected for use, the bottom boards 3 are supported by false work consisting, as shown, of stringers 4 secured to the upper ends of struts 5, in a familiar manner.

In accordance with my invention, the pans *a* are connected to one another by tie-plates 6 provided in their lower edges with slots 7 which are adapted to be inserted through corresponding slots 8 formed in the flanges 2 of said pans and which are constructed and arranged to interlock with each other, in the manner best shown in Fig. 2. Also, said pans are secured in position by lugs 9 thereon adapted to be nailed or otherwise rigidly secured to the bottom boards 3, said lugs preferably being provided with holes adapted to receive the nails or other securing means.

The lugs 9 will preferably be stamped directly from the tie-plates 6, forming holes 10 therein through which the concrete will flow when poured, thus providing a bond between the concrete at opposite sides of said tie plates.

To further bond the concrete at opposite sides of said tie-plate, notches 11 preferably are formed in the lower edges of said tie-plates through which the concrete will flow, when poured.

To effect the object of the invention as it relates to providing a support for reinforcing bars, when used, the tie-plates 6 preferably are provided in their upper edges with one or more notches 12 adapted to receive a reinforcing bar or bars 13. As shown, each of said tie-plates is provided with three such notches, but the number thereof may be varied as desired to meet any given conditions.

Also the tie-plates 6 afford convenient supports for suspended or false ceilings. Such suspended or false ceilings are usually hung from the ceiling proper by means of wires of suitable length, and in accordance with my invention, I make the tie-

plates 6 of such length that they will project beyond the sides of the floor beams, as shown at 15, and provide holes 16 in their projecting ends into which the wires 17 for supporting the suspended or false ceiling, not shown, are connected.

The term "bottom boards" used herein to designate the part or element 3, is employed generically to designate any flat piece or material suitable for closing the bottoms of the spaces defined by the depending marginal flanges 2 of the pans *a*.

I claim:—

1. A form for the purpose specified comprising a plurality of sheet metal pans consisting of intermediate deck portions, and depending marginal flanges, means for connecting the adjacent flanges of adjacent pans in spaced relation, boards on which the lower edges of connected flanges rest and which close the bottoms of the spaces between said flanges, the means for connecting said flanges consisting of tie-plates provided with slots which interlock with corresponding slots formed in said flanges.

2. A form as specified in claim 1, in which the lower edges of the tie plates are substantially flush with the lower edges of the marginal flanges of the pans.

3. A form as specified in claim 1, in which the tie-plates are secured to the boards on which the lower edges of the marginal flanges of the pans rest.

4. A form as specified in claim 1, in which the tie-plates comprise lugs at their lower edges providing means for securing said tie-plates to the bottom boards of the form.

5. A form as specified in claim 1, in which the ends of the tie-plates project beyond the marginal flanges connected thereby providing means for making wire connections thereto to suspend other structures therefrom.

6. A form as specified in claim 1, in which the tie-plates form supports for reinforcing bars to be embedded in the floor beams.

7. A form as specified in claim 1, in which the tie-plates form supports for reinforcing bars to be embedded in the floor beams, being provided with notches in their upper edges to receive and position said reinforcing bars.

8. A form as specified in claim 1, in which the tie-plates are provided with openings through which concrete at opposite sides of said tie-plates becomes bonded.

9. A form as specified in claim 1, in which the tie-plates comprise securing lugs at their lower edges stamped from said tie-plates and providing holes therein through which concrete on opposite sides of said tie-plates becomes bonded.

10. A form for the purpose specified comprising a plurality of metal pans consisting of intermediate deck portions and depending marginal flanges, supporting boards closing the bottoms of the spaces between said flanges, and members secured to said boards which connect adjacent flanges of adjacent pans, the opposite ends of these members projecting through holes in said flanges into the spaces between the flanges, these projecting ends being adapted to receive ceiling-suspending devices.

In testimony that I claim the foregoing as my invention, I affix my signature this 30th day of November, 1925.

NELS L. MALMGREN.