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2,705,359

MONOLITHIC BUILDING CONSTRUCTION

Filed May 28, 1953

3 Sheets-Sheet 1

FIG. 1.

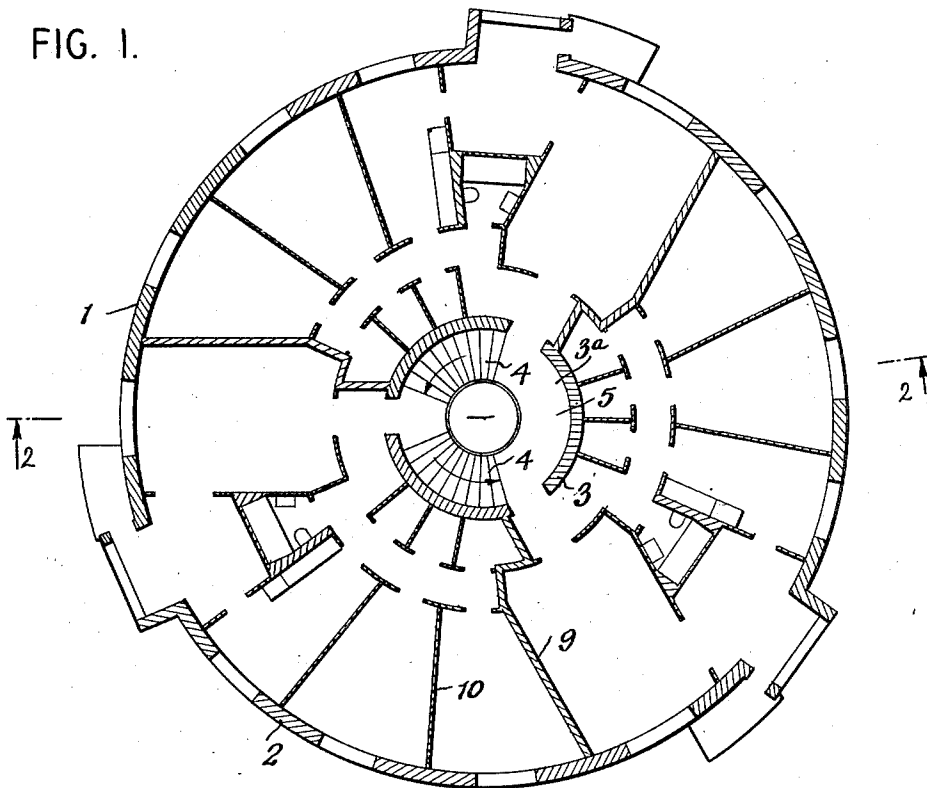
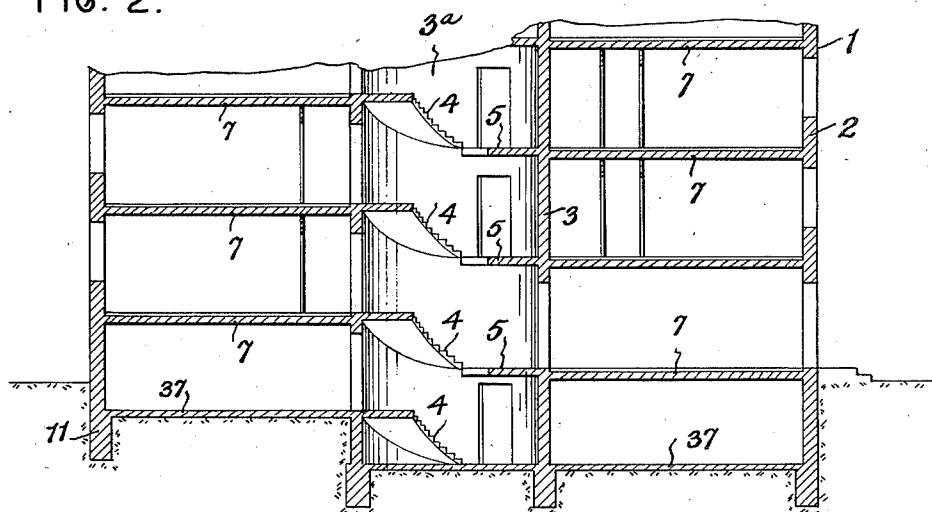


FIG. 2.



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FIG. 3.

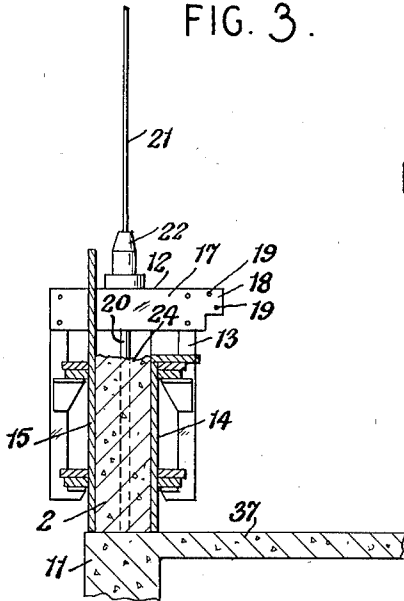


FIG. 5.

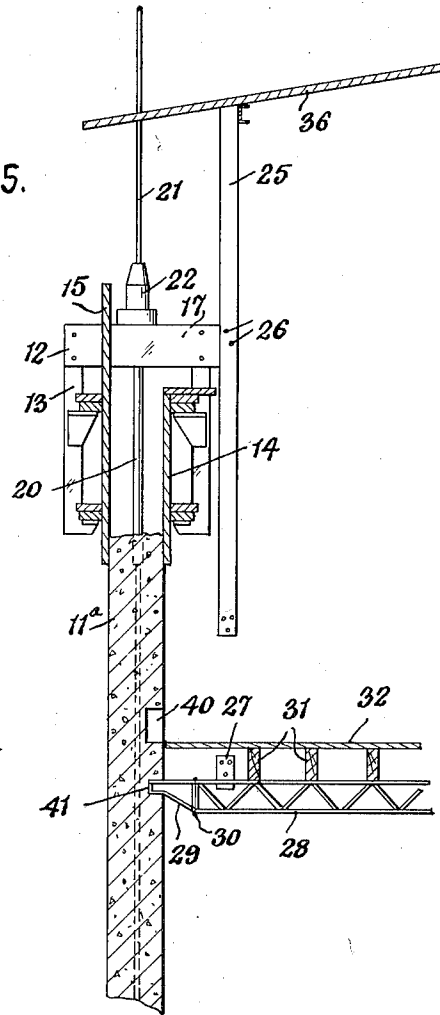
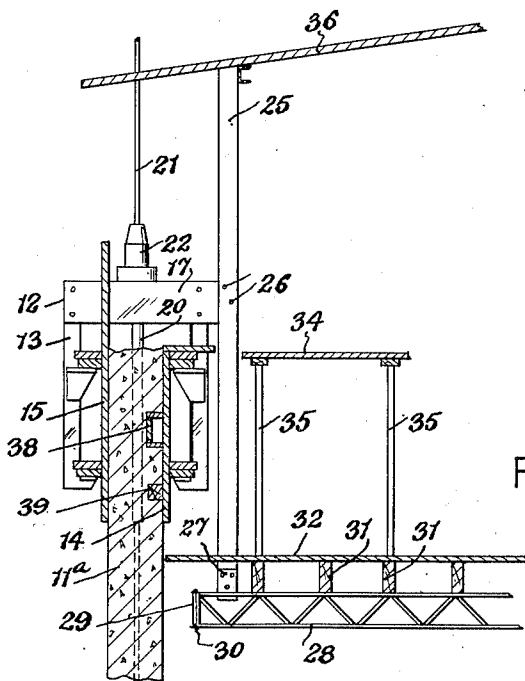


FIG. 4.



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FIG. 6.

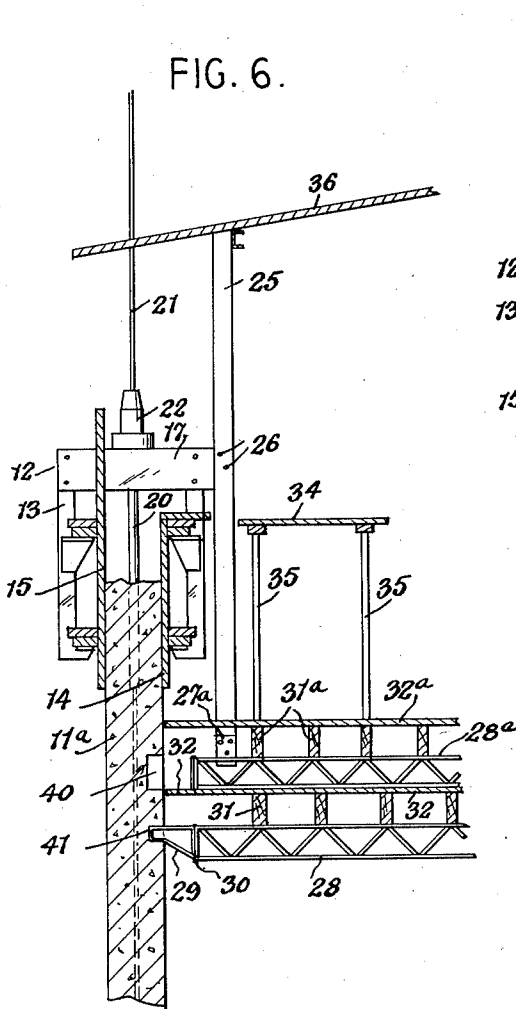


FIG. 7.

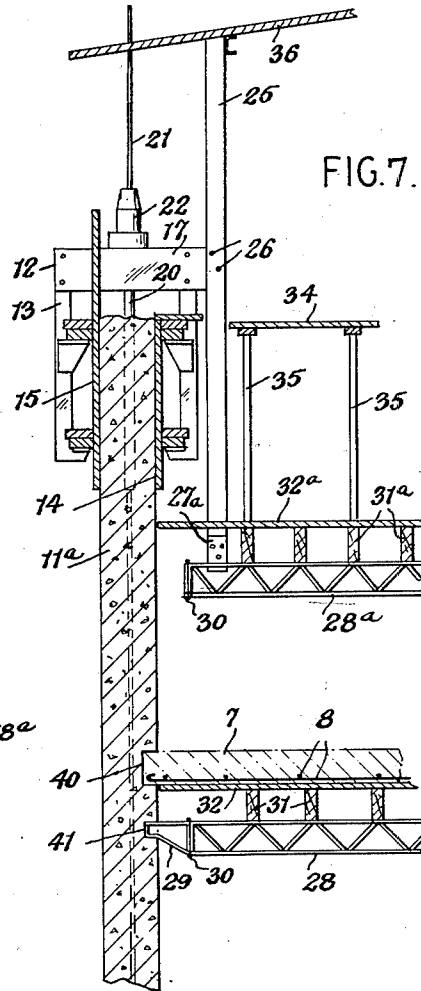
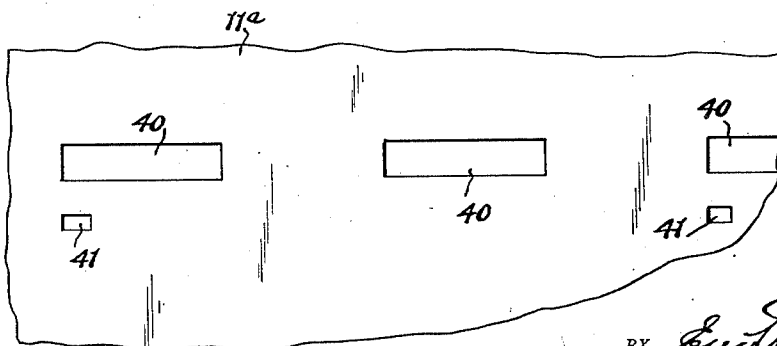


FIG. 8.



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MONOLITHIC BUILDING CONSTRUCTION

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Application May 28, 1953, Serial No. 358,033

9 Claims. (Cl. 25—131)

This invention relates to building construction, and more particularly to the construction of buildings of the monolithic type wherein concrete walls and floors are erected progressively and by the elevation of forms which are caused to rise as the erection of the building progresses.

It is an object of the invention to provide an improved building construction method by which the erection of a building of the type described will be simplified; which will result in the erection of a building of reduced cost and one which will functionally make use of all available space and which will be strongly and efficiently constructed.

It is an object of the invention to provide means by which floors and walls of the building can be erected progressively, with the forms for the molding of the walls arranged to be elevated in a manner to not only enable the walls to be easily and economically erected but to permit concrete floors to be also erected as the building of the walls progresses from the bottom to the top of the structure.

It is an object of the invention to provide a building construction which will be particularly useful in the construction of round, oval or similarly-shaped buildings, although the invention is not to be limited to the erection of buildings of those particular shapes.

With these and other objects to be hereinafter set forth in view, I have devised the arrangement of parts to be described and more particularly pointed out in the claims appended hereto.

In the accompanying drawings, wherein an illustrative embodiment of the invention is disclosed,

Fig. 1 is a horizontal sectional view through a building of the type which can be constructed by the use of the means and method of the present invention;

Fig. 2 is a sectional view, taken substantially on the line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a vertical sectional view through one of the walls and floors of a building, showing the movable wall form in place;

Fig. 4 is a similar view, showing the form elevated and the temporary flooring borne by the form carriage and in readiness to be elevated to the point where it is supported by the wall;

Fig. 5 shows the temporary floor in place and the form carriage elevated in preparation for the attachment of the next temporary flooring;

Fig. 6 shows the second temporary floor attached to the form carriage and in readiness to be elevated to the position where it will be supported by the wall;

Fig. 7 shows the second temporary floor in a partially elevated position and the lower concrete floor in position; and

Fig. 8 is a view of the interior face of the wall, showing the recesses formed therein to receive parts of the concrete flooring as well as the recesses in which the pivotal parts of the temporary floor are received.

Referring to the drawing, and particularly to Figs. 1 and 2 thereof, 1 indicates a circular building of a type to which the present constructional method and means is particularly applicable. It is also applicable to many other types of building, such as those which are oval and the like, and the particularly circular form is exemplary of one class of building which can be readily made. In this building there is the outer wall 2 which is a monolithic concrete wall that is molded by the means and method to be described. There is also an inner wall 3 which may also be circular and

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made according to the improved method. The inner wall surrounds or defines a stair well 3a in which the stairs 4 and landings 5 are located. The floors 7 are shown in staggered relation, although this is not a necessity of this type of building. The floors 6 and 7 are of concrete, reinforced as indicated at 8 in Fig. 7. The various partitions 9, 10 may be of usual construction and form no part of the present invention so the same are not herein described in detail.

The method to be followed in the erection of an inner or outer wall of the building can be readily followed by reference to Figs. 3 to 8 inclusive. Therein 11 indicates the foundation of the building on which the walls 2 and 3 are to be supported. In the erection of these walls, or that shown at 11a and which may correspond to walls 2 or 3, a form carriage, generally indicated at 12 is used, and the same includes a frame 13 which properly supports inner and outer form boards, respectively indicated at 14 and 15 in properly spaced relation according to the thickness of the wall to be cast. The concrete to form the wall is poured between the form boards 14 and 15 as clearly seen in the drawings. These form carriages or elevators are arranged at properly spaced intervals along the length of the wall to be produced, and are arranged for the molding of opposite walls simultaneously. At the top of the frame 13 is a cross member 17 provided with a projecting end portion 18 formed with bolt holes 19 for a purpose to be explained.

The form carriage or form elevator 12 carries a vertically-disposed sleeve 20 which is guided on a rod 21 located between the form boards 14 and 15 and which remains in the concrete wall and constitutes a reinforcing element therefor. Fitted on the rod 21 and adapted to move up or down on the same is a hydraulic lifting device 22 which will, when actuated, draw the carriage 12 upwardly together with the form boards carried thereby, to an elevated position and hold the carriage in such elevated position for the pouring of concrete on top of such part of the wall as has been previously cast.

In Fig. 3, the form carriage or elevator 12 is in position for the first pouring, and the concrete 24 has been poured in place between the form boards 14 and 15. After the concrete 24 has hardened sufficiently, the form carriage 12 is ready for elevation preparatory to the next pouring, but before the elevation of the form carriage takes place, a temporary flooring is attached to the carriage 12. This will be seen in Fig. 4, wherein it will be noted that a vertical beam 25 has been attached to the projecting part 18 by bolts 26 extending through the beam and through the holes 19. At its lower end, the beam 25 is bolted to a plate 27 secured on a trestle member 28. At each end of the trestle members 28 there is a movable end 29, pivoted at 30 and thus capable of being swung in a direction away from the wall when necessary, as shown in Fig. 4. Mounted on the trestle members 28 are joists 31 on which floor boards 32 are placed. There is thus attached to the beam 25, a temporary flooring consisting of the floor boards 32 mounted on joists 31 which are in turn supported by the trestles 28. A platform 34, mounted on the legs 35 may now be supported on the flooring 32 to facilitate pouring of the concrete. A roof covering for protective purposes may be also supported at the top of the beam 25, as indicated at 36. While the temporary flooring is shown as supported at one end it will be apparent that it is similarly supported at its opposite end by a form carriage or elevator used for making a second wall of the building.

The temporary flooring, constructed as above described, may be assembled on the foundation flooring 37 and when it has been so assembled and attached to the beam 25, the carriage 12 is elevated to bring it to the point shown in Fig. 4. It will be therein noted that form elements or inserts 38 and 39 have been put in place and are surrounded by the concrete that has been poured, these form elements resulting in the production, on the inner face of the walls, of the recesses indicated respectively at 40 and 41. The larger recesses, or those indi-

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cated at 40, are used for the reception of the poured and reinforced concrete flooring 7, while those shown at 41 are employed for receiving the ends 29 of the trestles 28.

After the concrete around the form inserts 38 and 39 has hardened, these form elements are removed from the concrete and the form carriage 12 is elevated sufficiently to bring the movable ends 29 of the trestle members 28 in registry with the recesses 41 and these ends are now pivotally swung on pivots 30 to the position shown in Fig. 5, to bring each end 29 of the trestle member into one of the recesses 41. At that time, it will be observed that the flooring 32 is on a level with the lower end of the recess 40. The temporary flooring is now supported by the wall structure and as soon as expedient, the concrete flooring 7 may be poured on it, with such concrete flooring being suitably reinforced as indicated at 8 and entering into the recesses 40. Before the laying of the concrete flooring is performed however, the next temporary floor is prepared. This is done by detaching the carriage from the now-in-place first temporary flooring and then causing the carriage to arise a short distance as in Fig. 4. The second temporary flooring indicated at 32a and similar to the first in that it includes the trestle members 28a and joists 31a is now assembled on the first temporary flooring, and when it has been assembled, the carriage 12 is lowered to an extent sufficient to enable the lower end of the beam 25 to be attached to the plate 27a of the second temporary flooring. The parts are now in the positions shown in Fig. 6, whereupon the carriage is elevated to the position shown in Fig. 7 for the next pouring. At the proper point in the elevation of the form carriage, the inserts 38 and 39 are placed in position and the second temporary flooring is fitted in place in the manner described with respect to the first flooring. This cycle continues for the height of the building and while the work is proceeding in the upper part of the building, the concrete flooring 7 can be laid on the lower floors, and the temporary flooring subsequently removed.

It will be understood that while I have herein described the manner in which a single form-supporting carriage or elevator is operative, this shall apply to a gang or group of the same operating simultaneously so that both inner and outer wall structures will rise coextensively at substantially the same speed.

Having described one embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to cover all structures coming within the scope of the annexed claims.

What I claim is:

1. In a building construction method, the steps of molding a concrete wall with recesses formed in it, attaching a temporary flooring to a movable form board carriage or elevator, elevating the form board carriage to bring the flooring to a level with the recesses formed in the wall and inserting parts of the flooring into said recesses to thereby cause the wall to support the flooring, detaching the form carriage from the flooring and then elevating the form carriage and pouring concrete in forms carried thereby to thereby raise the height of the wall.

2. In the method of constructing a building structure, the steps of casting a portion of a concrete wall structure by the use of a movable form carriage, preparing a temporary flooring on a previously prepared floor, attaching the form carriage to the temporary flooring, elevating the carriage and molding a wall section with recesses in it, then elevating the carriage to expose said recesses and entering parts of the temporary flooring into said recesses to thereby cause the wall to support the temporary flooring, and then detaching the carriage from the temporary flooring to permit the carriage to be moved upwardly and away from the flooring.

3. The method of constructing a building consisting in casting a wall section by the use of a vertically-movable form, attaching a temporary flooring to said form, moving the form away from the cast wall section to expose recesses formed therein, bringing the temporary flooring to a height to register with said recesses, and projecting parts of the flooring into the recesses to cause the wall to support the flooring.

4. The method of constructing a building comprising, casting a wall section by the use of a movable form, forming recesses in said wall section, attaching a temporary flooring to the form, raising the form away from

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the cast wall section to expose recesses cast in said section, projecting parts of the temporary flooring into the recesses to thereby cause the wall to support the flooring, detaching the form from the flooring, elevating the form away from the flooring, preparing a second flooring on top of the first, lowering the form and attaching it to the second flooring, then elevating the form and causing it to carry the second flooring away from the first.

5. The method of constructing a building comprising, pouring concrete between the form boards of a movable form, attaching a temporary flooring to the movable form, elevating the form with the form boards attached, pouring concrete between the form boards around inserts located between said form boards, elevating the form and removing the inserts from the concrete to thereby provide recesses on the inside face of the wall, extending parts from the flooring into said recesses, detaching the form from the flooring and moving the detached form away from the flooring leaving the same supported by the extensions which are then located in the wall recesses.

6. An apparatus for constructing buildings and like structures comprising a movable frame carrying spaced form boards between which concrete is formed to produce a poured concrete wall, a rod extending down through the concrete wall so produced, a sleeve on the frame surrounding and slidable on said rod, an hydraulic lifter on the frame fitted around the rod and operative thereon to elevate the frame, and means carried by the frame for detachable engagement with a temporary flooring, said means also supporting a protective roof at its upper end.

7. An apparatus for use in building construction comprising, a frame carrying form boards in spaced relationship for the erection of a wall, means for guiding the frame in vertical movement whereby the form boards can be elevated to increase the height of a wall being poured between the form boards, a flooring, means on the frame for detachable connection to the flooring so that upon elevating movement of the frame, the flooring as well as the form boards will be elevated, the flooring including movable end parts for entry into recesses in the formed wall after said recesses are exposed by elevating movement of the frame and form boards carried thereby.

8. An apparatus for use in building construction comprising, a frame carrying form boards arranged in spaced relationship for the erection of a wall, a rod disposed vertically in the formed wall, the frame provided with a tubular guide fitted on and slidable on the rod, the frame being vertically movable relatively to the rod whereby the form boards can be elevated for the progressive pouring of concrete between them to thereby increase the height of the wall, a flooring consisting of trestle supports carrying joists and floor boards, the trestle supports having movable end pieces to thereby increase the effective length of said trestle supports, said end pieces being adapted for pivotal entry into recesses in the formed wall after said recesses are exposed on the inside face of the wall by elevating movement of the frame and the form boards carried thereby.

9. In a building structure, a method of providing walls and floors of concrete consisting in progressively casting a concrete wall, moving the forms for said walls progressively upward and for predetermined distances as the wall is cast, casting recesses in said wall at predetermined distances, using the mold forms as carriers for temporary flooring, halting the mold forms at points to enable the temporary flooring to be engaged by said recesses and thereby supported by said engagement and then producing reinforced concrete flooring on top of the temporary flooring.

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