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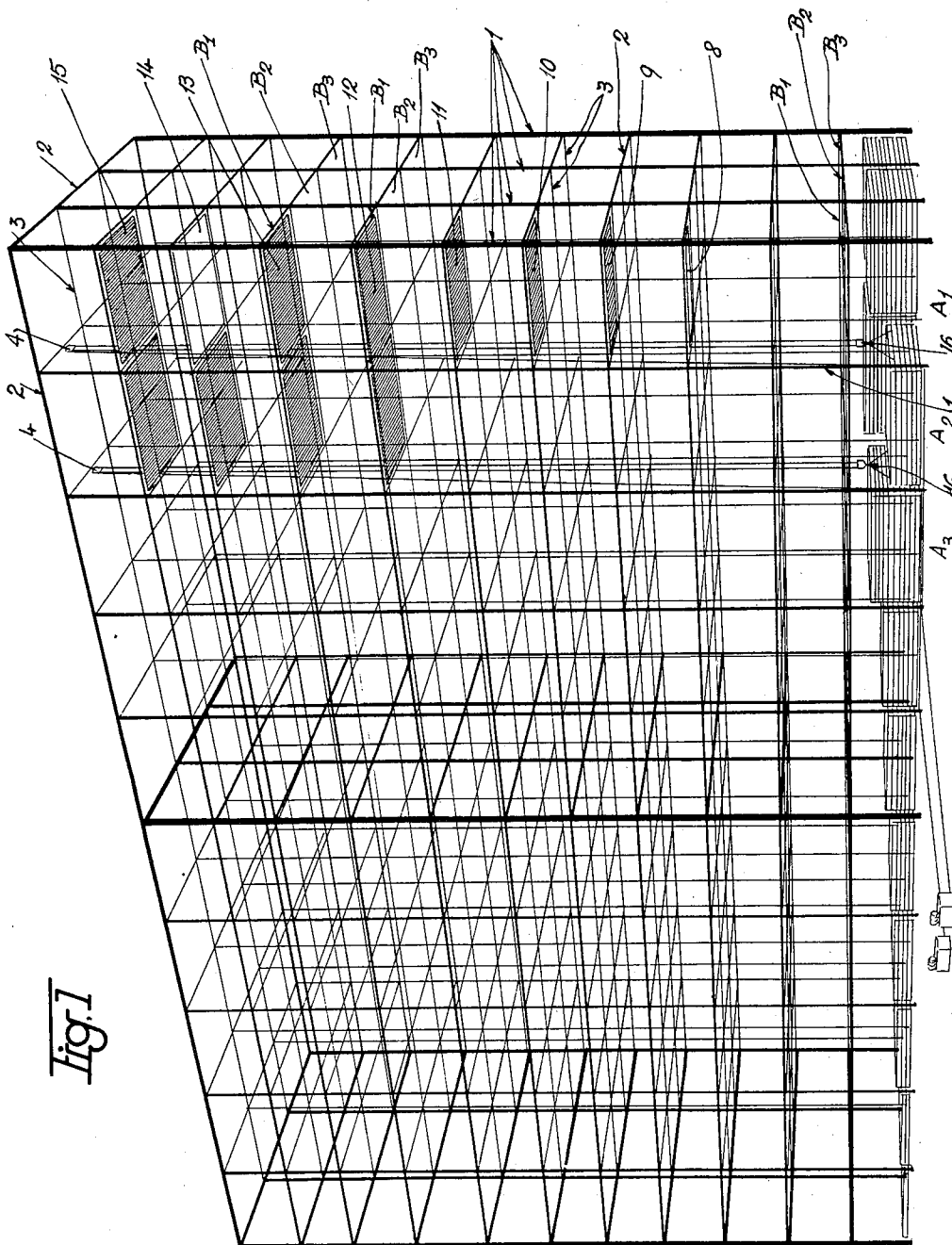
J. L. FAYETON.

2,964,143

METHOD OF ERECTING BUILDINGS

Filed May 12, 1954

3 Sheets-Sheet 1



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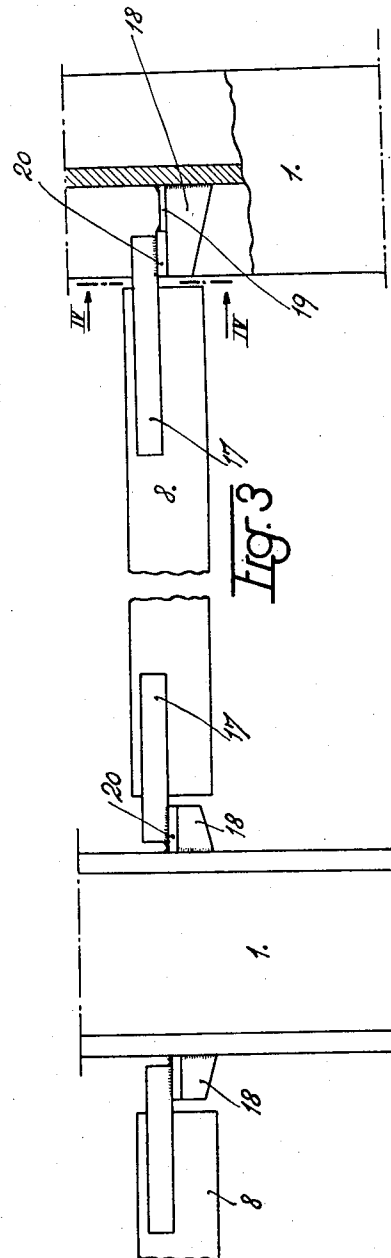
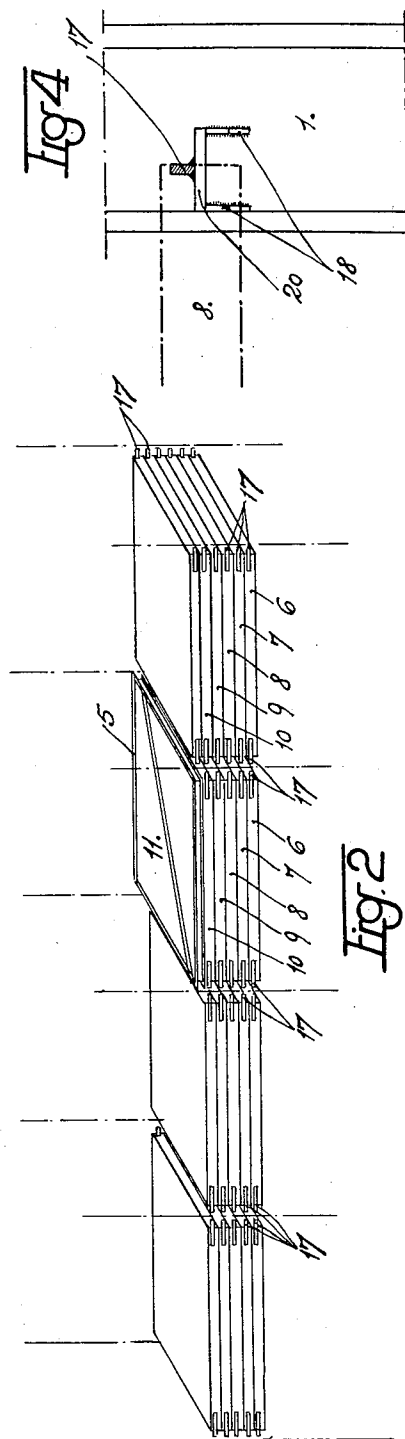
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3 Sheets-Sheet 3

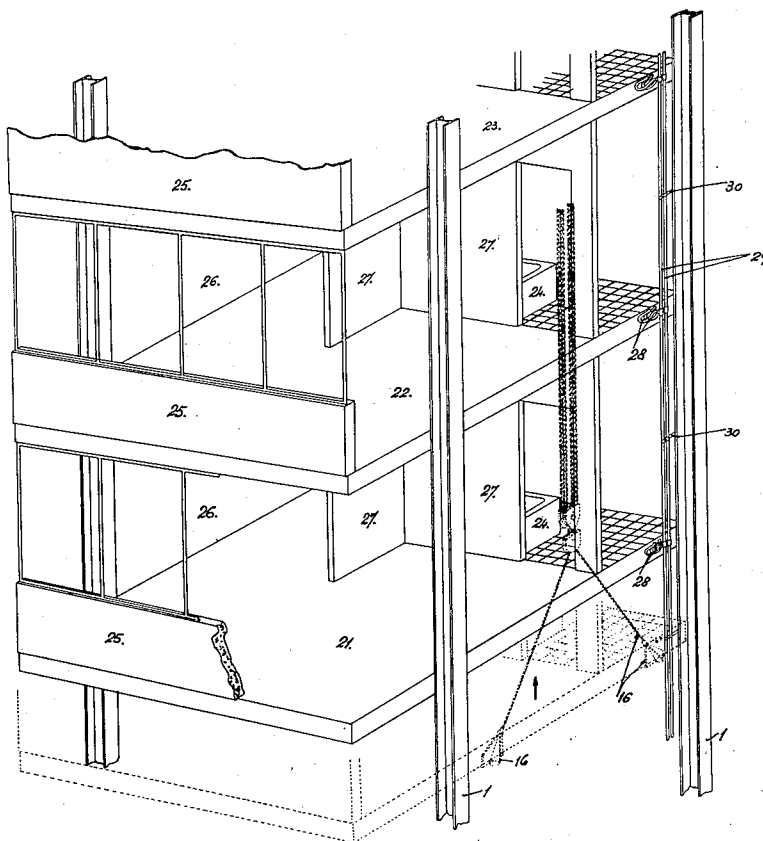


Fig 5

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2,964,143

METHOD OF ERECTING BUILDINGS

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1 Claim. (Cl. 189—1)

My invention has for its object a method for executing structures such as buildings with a view to obtaining a substantial reduction in price. Said method consists chiefly, after erection of a skeleton of the building, whether of a metal, concrete or compound type, or of any other type, in using said skeleton as a scaffolding or as a support for hoisting means adapted to raise above ground and in succession up to their final location starting from the upper story, floors or floor elements for the different stories, said floors or floor elements carrying possibly inwardly or outwardly all or part of the auxiliaries of the building to be erected, or again the superstructures to be carried by the latter, such as for instance the heating system, the sanitation system, the walls and partitions or sections thereof and the like.

The floors or floor elements may be pre-fabricated elsewhere or again, they may be prepared on the building site according to any known method and in accordance with any known type.

The hoisting means are mounted on the upper section of the skeleton or framework of the building and are adapted to raise in succession said floors or floor elements to the level of the corresponding story, the positioning of the floors or floor elements being executed in succession from the upper end of the building downwardly.

According to a particular feature of my invention, the floor or floor elements may be pre-fabricated on the ground inside the location of the building to be erected through casting, after which they are stacked over each other, the upper surface of each floor or floor element serving as the bottom of the mold for the floor or floor element to be cast directly over it. The hoisting means take hold of, raise and position in succession the different molded floors or floor elements, beginning by the uppermost floor or floor element of the stack and continuing with the next to correspond with the successive stories from top to bottom.

This particular feature allows executing floors or floor elements provided in the casting with lower and upper surfaces which are sufficiently accurate so as to require no finishing coats or covers as is often the case, and the ground and ceiling material may be incorporated into said floors and floor elements, if required. The invention allows reducing considerably the cost of planking or shuttering and cuts out the necessity of staying throughout almost the entire surface of the flooring.

Any means may serve for assembling each floor or floor element to the skeleton of a building or the like structure as soon as said floor or floor element has been brought into position at the desired level. The assembling may be provided with any skeleton elements, as may be desired, either at the angles or along the sides of each floor or floor element. In the following description, a typical assembly used in the case of a metal skeleton will be described by way of example.

It is an easy matter to ascertain the considerable economy arising by reason of the simplicity of erection pro-

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vided according to my invention by a more vertical rising, without any lateral shifting, of the floors or floor elements carrying their auxiliaries or super-structures, if any; it is also apparent that the procedure of execution of such floors and floor elements for use in the application of my improved method is extremely simple.

I have illustrated in accompanying drawings by way of example and by no means in a limiting sense a preferred embodiment of a building having a metal skeleton or framework and executed in accordance with my improved method. In said drawings:

Fig. 1 is a perspective view of the skeleton of the structure, the floor elements being shown in the position assumed during the erecting procedure;

Fig. 2 is a perspective view showing the prefabrication at ground level in situ of the floor elements;

Figs. 3 and 4 are respectively an elevational, partly torn-off view and a sectional view through the line IV—IV of Fig. 3, showing the means for assembling a floor element according to Fig. 2 with the uprights of the structure skeleton;

Fig. 5 is a perspective view showing the hoisting of a floor element carrying various auxiliaries.

The method according to my invention consists in first erecting the skeleton of the building, which skeleton is assumed to be made of metal in the embodiment illustrated, said skeleton including uprights 1 and horizontal beams 2 and stays 3. Said skeleton forms, for instance, a number of transverse bays A1—A2—A3 arranged in juxtaposed relationship and provided each depthwise in each story with three cells or recesses B1—B2—B3, for instance, extending each over the length of a transverse bay.

By way of example and always in a non-limiting sense, it may be mentioned that the surface of the bottom of each recess may measure 4 x 4 m.

After erection of the skeleton and after covering it, if required, with the roof of the final structure, said skeleton serves as a scaffolding for the mounting and the positioning of the floor elements inside the cells or recesses in each story of the building, beginning by the upper story and flooring in succession the different stories so as to finally reach through a downwardly directed progression the first story of the building.

To this end, hoisting means 4 such as a tackle block required for positioning the floor elements in the different stories of the structures are suspended from the upper part of the metal skeleton in vertical register with the different superposed cells or recesses B1, B2, B3 in each bay A1, A2, A3, etc.

The floor elements may be prefabricated outside the building site and brought onto the ground in vertical register with the different recesses of the skeleton or else they may be prepared in situ directly on the ground in vertical register with the different recesses, said elements being adapted to cover the recess openings in the different stories.

The hoisting means 4 being thus located in suitable numbers at the upper end of the metal skeleton, the floor elements are lifted above ground by said hoisting means and raised in succession so that they may be positioned at the desired levels, the recess in the uppermost story being fitted first as disclosed with its floor element.

Any suitable means may serve for attaching in each story the floor elements to the metal skeleton: for instance, each floor element may be caused to rest on the beams and stays of the skeleton or else it may be attached at its apices through a point within its thickness or outside same to the upright of the skeleton, which may cut out the possibility of any beam projecting and being apparent in the different ceilings.

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Each floor element may be raised and positioned separately or with the different auxiliaries which may be previously mounted on or incorporated to it, such for instance as a heating system, a sanitation system, a distribution system, etc. and even partitions, walls or portions thereof. Each floor element may also be provided, before its hoisting and during its execution, with a heating system or with pipes embedded inside it and adapted to be connected thereafter to vertical pipes secured for instance to the skeleton of the building or the like structure. It is also possible to hollow out the lower surface of each floor element forming a ceiling as may be required for positioning or assembling auxiliary elements of the building.

According to a further feature of my invention, the floor elements corresponding to the superposed recesses in the different stories, ten stories in the case of Fig. 1, may be executed in superposition on the ground and inside the vertical projection of the superposed recesses as readily apparent from inspection of Fig. 1.

To this end, a carefully executed area is prepared on the ground at the desired location so as to form the bottom of a mold and there is molded over it between the four sides of a shuttering such as 5 (Fig. 2), a slab of any suitable material such as ordinary concrete, vibrated or prestressed concrete or the like adapted to form the floor element for the first story. The material resorted to should be such that, when resting for instance through four apices as in the case of the engagement of the floor element over parts of the metal skeleton as illustrated, the molded slab obtained may carry its own weight together with the overload.

It should be remarked that the possible prestressing of the slab system is allowed after the positioning of the slabs; said pre-stressing may in fact be exerted in both orthogonal directions.

The upper surface of the prefabricated slab 6 thus obtained is carefully smoothed and levelled in register with the upper edges of the shuttering 5; this provides thus a perfectly flat surface which serves as a mold bottom wherein the next slab 7 may be cast, which is intended to form the floor element for the second story, said slab 7 being molded inside the sides of the same shuttering 5 which is suitably positioned with reference to the upper surface of the previously cast slab 6. Care should be taken to insert a suitable insulating material between the first and the second slab before the casting of the latter so as to prevent adherence between the concrete of the second slab and the concrete of the first slab.

The procedure continues by casting in stack formation the successive slabs 8, 9, 10 and 11 . . . forming the superposed floor elements in the ten stories of the building. These different slabs are perfectly similar to one another.

In Fig. 2, the sixth slab 11 is shown during its casting.

The floor elements in the different recesses B1, B2, B3 of the different bays A1, A2, A3 forming the building skeleton are all prepared in the same manner.

When the different stacks of say ten slabs 6, 7, 8, 9 . . . 15 are finished, the upper slab 15 of the stack is first raised by means of the hoisting means 4 engaging said slab through the hooking means 16. Said uppermost slab is positioned in the uppermost of the ten stories and it is assembled with the beams or with the other elements of the skeleton. This being done, the next highest slab 14 is raised and positioned on the ninth story and this continues in sequence until the first floor receives its slab.

It is possible for instance to assemble each slab forming a floor element to the metal skeleton in the following manner: each slab 6 to 15 includes at each of its apices a projection or nose 17 adapted to carry one quarter of the total load to be borne by said slab (Fig. 2). At each story (Figs. 3 and 4) the uprights 1 are provided with

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small twin brackets 18 which may be welded thereto for instance by means of a small welded plate 19, said twin brackets being adapted to carry together one quarter of the total load of a floor element.

When a slab such as 8 for instance is raised by the hoisting means so as to be brought into register with say the third story, its noses 17 are caused to pass through the corresponding twin brackets 18 of the associated uprights so as to be located slightly above the upper level of the brackets. A shim 20 is then fitted between each pair of twin brackets 18 and the corresponding nose 17. The four noses 17 of the slab considered are then allowed to rest on the corresponding twin brackets 18 with the interposition of the shims 20 which are welded to the associated twin brackets and noses 17. The floor element or slab 8 considered is thus permanently secured to the skeleton of the building.

It is then possible to fill the intervals separating the adjacent floor elements forming the floor of a same story of the building by casting concrete or the like material inside suitable shutterings, said concrete or the like material enclosing skeleton sections together with the apex-securing means provided in the floor elements and engaging the skeleton.

The slabs 6 to 15 thus executed may be solid and assume any desired thickness or else they may include inner cavities obtained in any known manner during the casting procedure; said cavities may in particular be provided so as to allow introducing within the thickness of the floor heating elements, pipes or the like parts.

In the example illustrated in Figs. 3 and 4 corresponding to the case where the floor elements are assembled by projecting noses to the uprights of the skeleton as disclosed hereinabove and assuming as precedingly by way of example, that the recesses in the skeleton assume a size of 4 m. x 4 m., each of the slabs 6 to 15 may be given a size of about 3.60 x 3.60 m.

Obviously, in the case of the execution of floor elements with a stacking thereof as disclosed hereinabove, it is possible before raising and positioning each element to provide it, as already disclosed, with all auxiliaries or superstructures to be carried thereby such as a heating and or sanitation system, distribution systems and the like.

Fig. 5 illustrates the manner of hoisting a floor element such as 21 which has been prefabricated in stack formation as described hereinabove, said floor element being intended for positioning at the story located underneath the stories already occupied by floor elements such as 22 and 23.

I have illustrated in interrupted lines the floor element 21 during the raising thereof and in solid lines its final location. Said floor element has been assumed to be equipped, in the same manner as the other floor elements precedingly positioned in the stories above it, with auxiliaries such as a sanitary appliance 24, a front wall 25 with its bays 26, partitions 27, etc.

Instead of resting on the metal skeleton of the building through their four apices, the slabs forming the floor elements may be suspended each from said skeleton through two points of their longer sides, which allows positioning two slabs instead of three in each bay comprising three recesses; this arrangement improves thus the continuity of the flooring.

In Fig. 5, I have thus illustrated at 28 metal hooks rigid with vertical rods 29 secured at 30 to the uprights 1 of the metal skeleton, said hooks being adapted to provide for the possible fitting in either direction of slabs such as 21, 22, 23 forming floor elements, through the agency of concrete or the like material cast as precedingly disclosed between the slabs after their positioning in the desired location.

Obviously, the method according to my invention al-

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lows positioning, before the actual flooring is laid, a roof or the like covering means for the building.

My invention covers as claimed in the accompanying claim both the method of erection of a building and the structure or building or sections thereof executed in accordance with said method.

What I claim is:

A method of constructing a multi-storied building consisting in erecting at least a portion of the permanent supporting building framework to the height of the finished building and with vertical passageways within said framework for moving floor elements therethrough from the bottom to the top floor, prefabricating a plurality of said floor elements independently of said framework, positioning each of said floor elements at the bottom of one of said passageways, thereafter drawing one of said floor elements through the passageway in which positioned to the floor of the top story of said framework, drawing additional floor elements upwardly in said passageway each to the floor level of a succeeding story of

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said framework starting beneath said top floor at the next floor therebeneath and working downwardly, similarly drawing further floor elements up through each of the passageways in said framework and permanently connecting said floor elements to said framework at their resulting floor level.

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