

Sept. 23, 1958

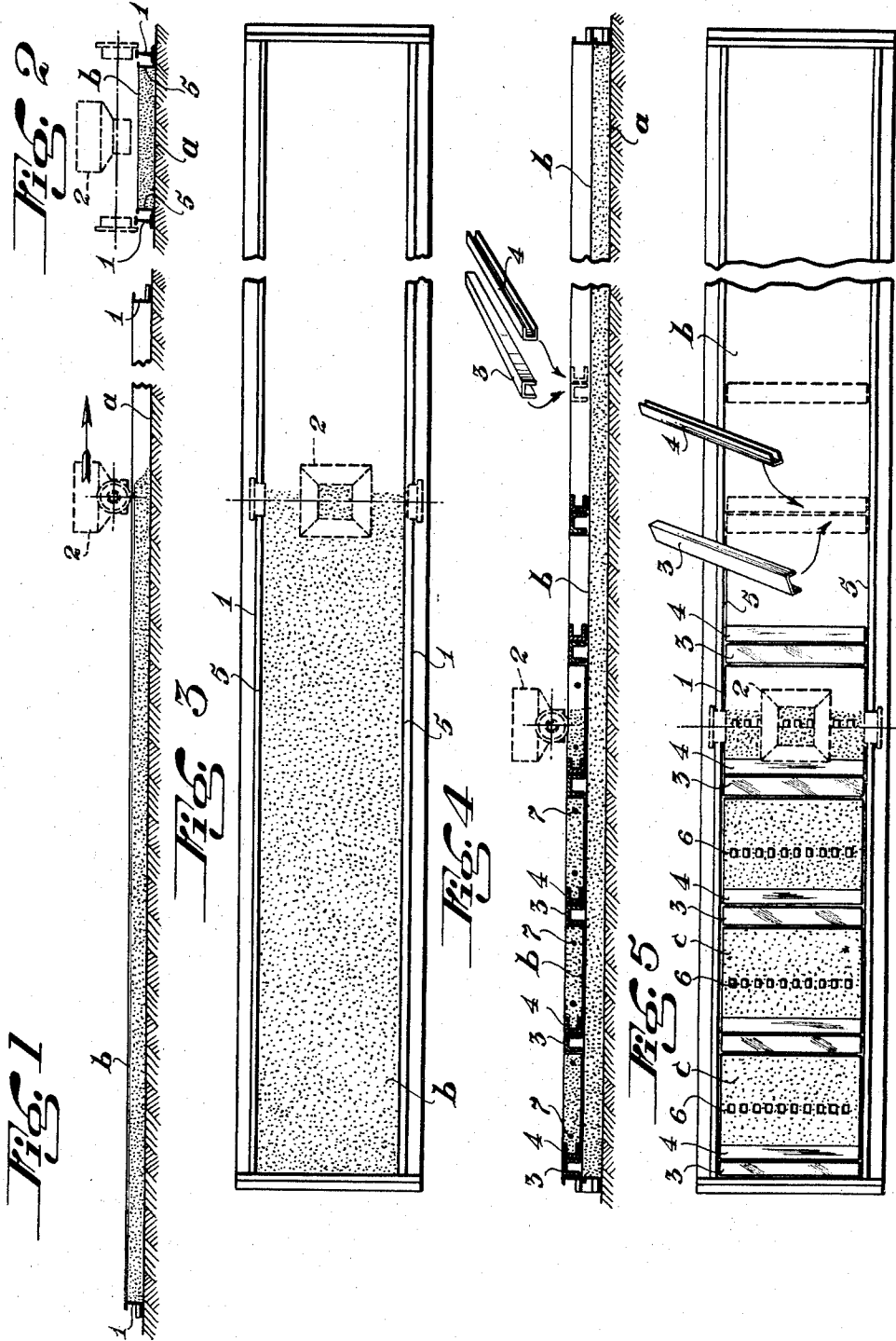
A. BONET

2,852,931

METHOD FOR HOUSE-CONSTRUCTION

Filed July 6, 1956

4 Sheets-Sheet 1



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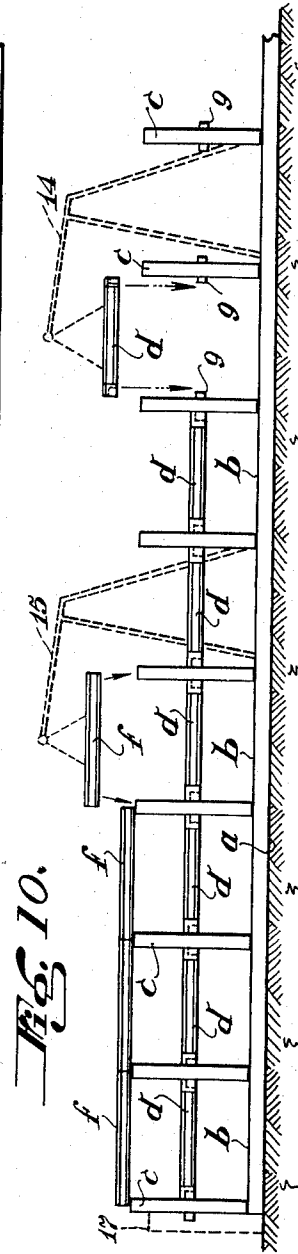
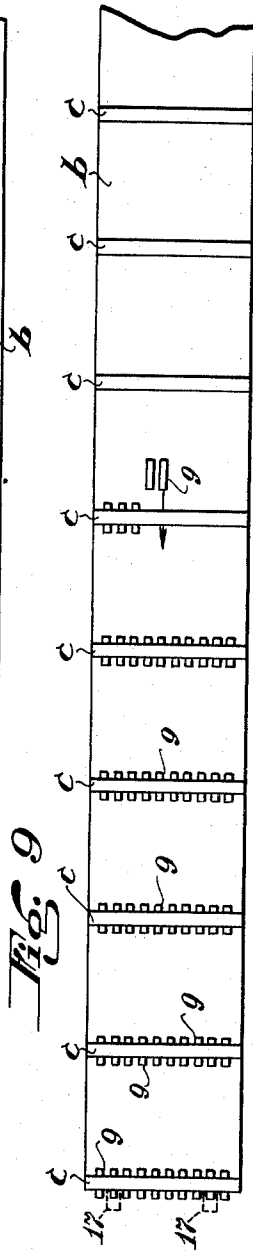
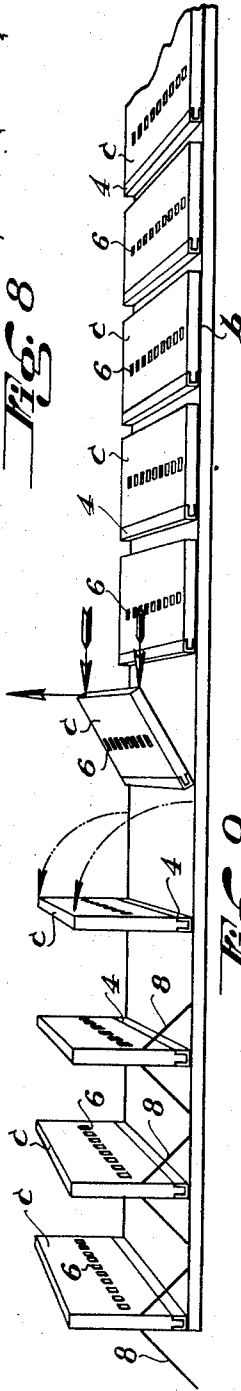
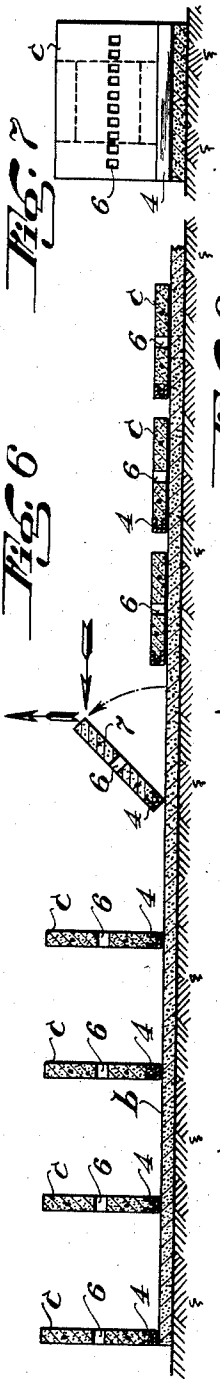
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Fig. 12

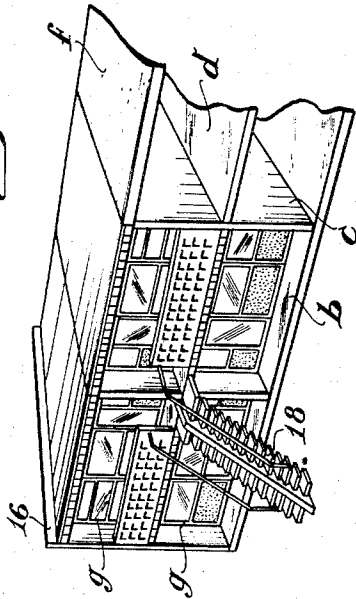


Fig. 11

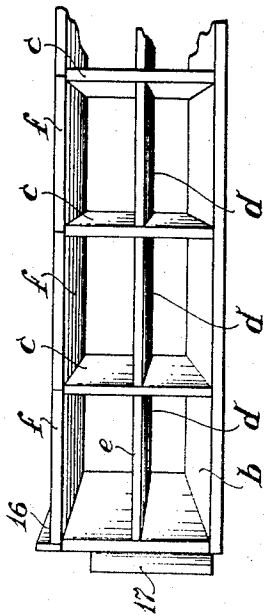
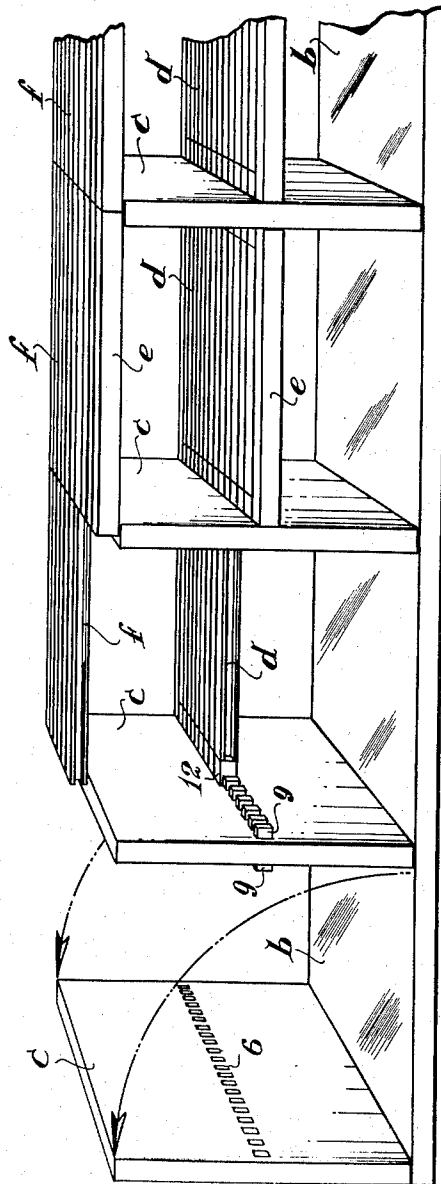


Fig. 13



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Fig. 14

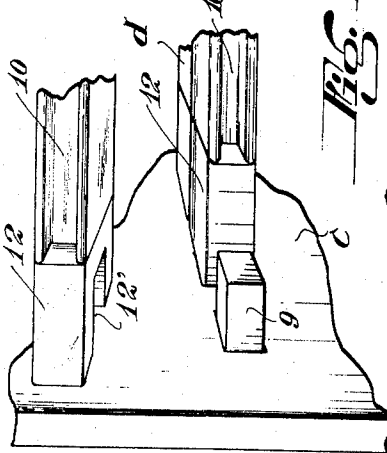


Fig. 15

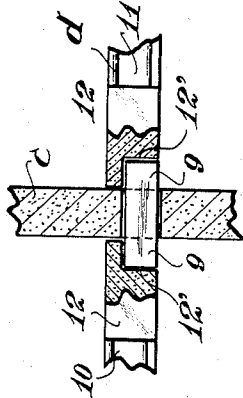


Fig. 16

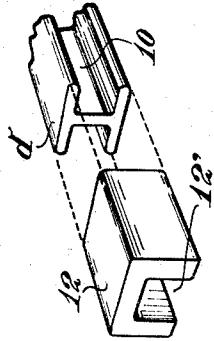


Fig. 17

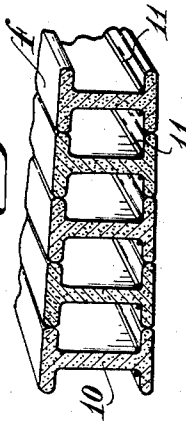
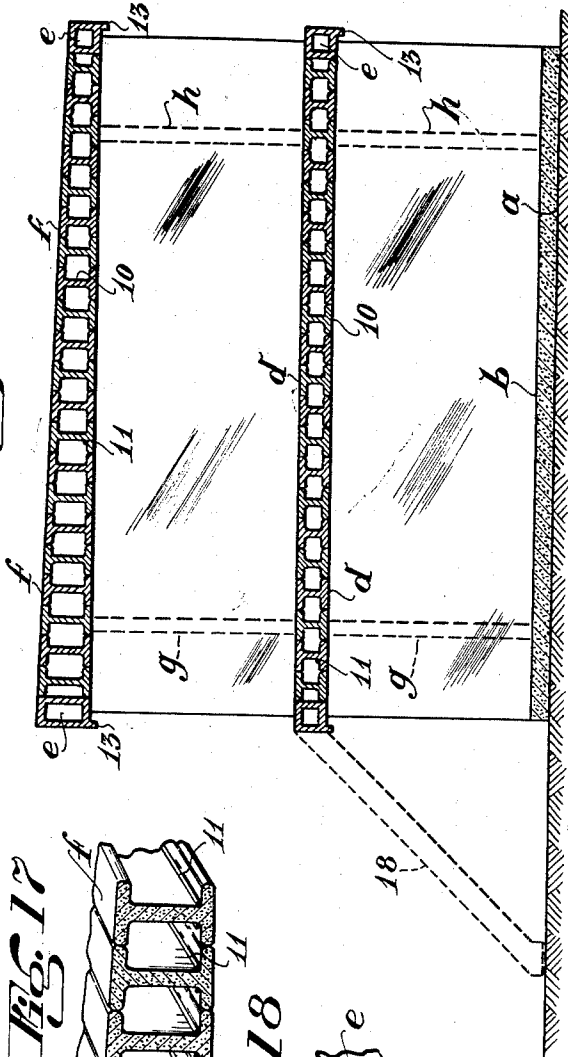


Fig. 18



Fig. 19



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2,852,931

METHOD FOR HOUSE-CONSTRUCTION

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Application July 6, 1956, Serial No. 596,228

2 Claims. (Cl. 72—1)

The present invention relates to the construction of dwellings, and more particularly to operations which allow the erection of dwellings in the most economical manner possible.

In effect, the invention deals with fundamental construction "in situ" in which the flooring proper serves as a base for the molding of the respective walls, so that the forming of the different concrete parts is effected in series. Said walls, in the horizontal position in which they are molded, are raised to a vertical position for the separation of the rooms and walls, and walls can be provided for spacing between floors so that two superposed houses per section may be obtained. Thus means that with a frontage of 130 meters, for example, a series of bases for about 50 houses may be erected for the use of numerous families.

To this end, as with roads, the first step includes preparation corresponding to the flooring of the ground piece for the different sections; when the concrete is set, the molding of the walls is effected horizontally, having as a base the set concrete flooring, so that without special plank lining apart from that given by the fundamental means, these walls are prepared in the same manner as the floor, but with the necessary divisions so as to define its proportions and shape. Thus, by operating in line and employing the usual mixing machines and other auxiliary current means, the necessary structures are obtained. After the setting of the concrete, the walls are lifted in order to act as common separating walls.

The forming of said walls is provided for by means which will allow the inclusion of other complementary bases in the dwelling as, apart from the conduit tubing and other installations, there are also included perforations prepared to receive brackets on which rest the beams separating the floors. In this manner the bases are prepared for the two floors which are then completed by roof beams, intermediate separations, front and back walls, sanitary separations, etc.

Apart from what has been stated, the objects of the present invention include that of providing bases for the erection of very inexpensive houses, the same being suitable for family residence.

Another object is that of alleviating the housing problem of various countries as, with a minimum investment, strongly built houses may be erected, which can compete with more expensive buildings.

Another object of the invention is that of simplifying the building of independent houses in series.

Another object is that of simplifying construction methods so that a reduced crew of workmen may yield maximum production.

Further objects will be shown throughout the following specification in which, for a greater clearness and comprehension, the invention has been illustrated by several drawings, in which:

Fig. 1 is a longitudinal section of a prepared plot of land on which, guided by rails, operates a concrete mix-

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ing machine in order to form concrete flooring as a base for several houses to be erected.

Fig. 2 is a transverse section of the concrete flooring with the corresponding mixing machinery on provisional rails.

Fig. 3 is a plan view of Fig. 1 showing how the mixing machine, mounted on rails operates on a whole section, as in road building.

Fig. 4 is a longitudinal section of the ground when the concrete flooring is ready and showing the spacing of separators and edge reinforcements in order to form the walls horizontally.

Fig. 5 is a plan view of Fig. 4 showing the adaptation of the separators and edge reinforcements so as to form the walls which are molded with perforations for applying the brackets which sustain the beams between the floors. In the same may also be seen the manner in which, after applying the separators and edge reinforcements, the concrete mixing machines mounted on provisional rails carry the material on the framework previously set so as to mount each part.

Fig. 6 is a graphic demonstration of how, after the parts of the walls are set, these are elevated, remaining vertically on their edge reinforcements.

Fig. 7 is a sectional view of Fig. 6 showing one of the walls duly erected which, apart from the openings corresponding to the inset installations, are provided with a plurality of perforations for the corresponding brackets where the beams rest.

Fig. 8 is a schematic view of Fig. 5 in which may be appreciated the manner in which the different parts are elevated thus forming the separating walls.

Fig. 9 is a plan view of the vertical parts in position so as to form the walls where the elements constituting the brackets are placed for the resting of the beams, and showing the manner in which these brackets are placed with the greatest ease.

Fig. 10 is an elevated view graphically showing the manner in which, in the first place, the beams are set on the brackets so as to form the separation between the floors and, secondly, how the beams are set in order to form the roof so as to obtain two floors superposed.

Fig. 11 is a schematic perspective of part of a house formed by various sections which, with the flooring separation, forms two floors for the dwelling.

Fig. 12 is a perspective view of the dwelling under construction, part of which is already completed with its corresponding doors and windows as well as a stairway.

Fig. 13 is a perspective view of different steps in the building of the same, on a larger scale, so as to show the bases in greater detail.

Fig. 14 is a part of a wall showing a bracket disposed to receive the terminal end of a beam forming the separating flooring.

Fig. 15 is a section of a wall in elevation showing the corresponding part of the rest of the beams in the sockets, said beams passing through the openings made in the wall.

Fig. 16 is a view of a separating beam shown in section so as to note the double T profile and the adaption terminal of the bracket.

Fig. 17 is a view of the beams of the roof in which may be appreciated the slant formed by the top part of the double T and the gradient for the evacuation of water.

Fig. 18 is a view of the anterior and posterior beams between the floors as well as the roof beams. And finally,

Fig. 19 is a sectional view of a building erected according to the principles of the invention showing a two floor structure. The slanting roof enables the water to run off.

In the different drawings the same reference numbers

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indicate corresponding parts, the various elements being indicated by letters.

As may be seen in the drawings, *a* is the ground on which rails 1 are disposed which, although provisional, form a relatively strong track to sustain the concrete mixer 2 which can be of any known type and may be combined with other known machines employed in construction work.

Rails 1 must be as long as that corresponding to the front of the building to be erected. A railroad of 130 meters of length can be used, for example, to erect a set of multiple dwellings.

The machine 2 proceeds to form the flooring *b* which, made in concrete, is easy to construct, after which a layer of cement may be applied in order that the same may be completely even and in condition to be polished. The width of flooring *b* limited by planks 5 is the predetermined length for the houses to be built.

After the concrete floor *b* is made with a width corresponding to the length of the houses and in the overall length in proportion to the number of houses to be erected, the second step follows. After the cement of flooring *b* is completely set, the same is prepared by applying greased paper on its entire surface and positioning the separators 3 and edge reinforcements 4.

The separators 3 and reinforcements 4 are of a length equivalent to the rooms to be built. Thus, the second step includes disposing between rails 1, transversely from rail to rail, the separators and reinforcements as shown in Figs. 4 and 5.

Separators 3 are disposed from each other at a distance equivalent to the height which the building is to have, for between said separators 3, a concrete part must be formed for the common wall *c*. This means that between the planks 5 and the separators 3, a mold is obtained which, with the bottom proper of the floor *b* duly papered, will form the wall *c*.

The mold for each wall will be, between planks 5, about 15 meters (as an example) and since each wall corresponds to the two floors, between separators 3, the wall *c* must be about 5 meters, calculating that each floor has its ceiling at about 2.50 meters from the floor. In parallel to separators 3, the cores must be disposed in the middle axis of the mold so as to form the perforations 6 in which pass the reposing brackets for the beams between the floors and, in each mold of wall *c*, a reinforcement edge 4 must be applied, so as to reinforce the lower part of the wall in order that when same is elevated it shall not suffer in any manner. In view of the fact that the displacement of the same must be that of 90 degrees, and so that it may have the necessary resistance, the mold is prepared with steel rods 7 for concrete reinforcement and with electrical connection boxes, tubing and other elements for the installation of electricity, water, etc.

The molding of the parts which are to form walls *c* is done by the concrete mixer 2 or any other machine mounted on rails 1, so that said parts *c* are molded one after the other, as done with the flooring *b* serving as mold.

When the parts *c* are molded, the separators 3 are withdrawn and, by such means as a tractor and a crane, the parts are elevated to a vertical position, resting on their respective edge reinforcements 4, as shown in Figs. 6, 8 and 13.

So as to maintain walls *c* in vertical position, props 8 are to be used which are provisionally disposed as shown in Fig. 8.

The area between the two walls *c* corresponding to two dwellings, is as already explained, one in which each wall is proportioned for two plants divided by an intermediate horizontal plane. That is way each wall *c* presents in a horizontal line a row of openings 6 which, through molding, accommodate brackets 9 on which rest the beams of the flooring *d*.

Brackets 9 are parallelepiped bodies of a greater length

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than that of the thickness of walls *c*. Thus, when set as in Fig. 9 these brackets overlap sufficiently for the resting of specially shaped beams *d*.

Said beams *d* as shown in Fig. 16 are formed by a plurality of double T segments 10 which, assembled with rods 11, complement terminals 12 which possess channel 12' coinciding with the outlet of each bracket 9. Said beams *d* are pre-compressed so that their rigidity offers great resistance to flexure.

Since the floors are formed by juxtaposition of beams *d*, the brackets 9 must be set at the same corresponding distance to the dimension of the profile from axis to axis; that is why, with a predetermined distance from brackets 9, in conformity with beams *d*, it is sufficient to set said beams in their respective brackets so that they form the intermediate flooring, and since said beams have a double T shaped body with corresponding openings between its flanks so that said openings are covered in the front as in the rear part of the structure, it forms a beam-box *e* as the terminal of the series of separating flooring, said beam-box *e* possessing an overlapping rain piece 13 as shown in Figs. 18 and 19.

The beams *d* being pre-compressed, are mounted separately and are set by a crane 14 as shown in Fig. 10 which means that the setting of said beams is practically a composition mounting.

When the intermediate floor is assembled, a composition is strewn on the same which can be conveniently polished.

The roof is formed with beams *f* as shown in Fig. 17; that is to say that the same are pre-compressed. The beams *f* are of double T profile and they vary in size to form a slanting roof for the running off of water, the greater slant being shown at the rear of the dwelling. The roof ends at both extremes with beam-boxes *e*.

As may be seen in Fig. 10, the beams *f* are also placed by means of a crane 15 and since the length of these beams is equivalent to the distance comprised between the walls *c* from axis to axis, when applied as in Fig. 10, the passages are closed forming a continuous roof not only through the juxtaposition of each row corresponding to two rests, but also by the continuity of one row with another successively, as the beams repose on the middle of each wall *c* forming the common wall of each body of the dwelling.

The roofs formed by beams *f* are completed with parapets 16 and in order to avoid any leakage of rain water, the upper part of the roof is covered with a bituminous carpet.

At each end of the dwelling, that is against the first and last wall *c* there is a reinforcement made by counterforts 17 which consists of plank lining in the usual manner for a reinforcement of the whole building.

On the frontage obtained by the walls between the floors and roof, are provided front openings *g* with doors and windows, while at the back of the house may also be provided doors and windows.

In this manner between each pair of walls *c* may be obtained two superposed apartments, one of them corresponding to the lower part in which the floor is constituted by the part *b* conveniently polished, while the ceiling of same is determined by the lower part of beams *d*. The other apartment corresponding to the first story has its floor on beams *d* and its ceiling is constituted by the lower surface of the roof formed by beams *f*.

The apartment comprised between walls *c* can be subdivided in any manner by internal separations so as to form different rooms.

The top apartments must possess at least a stairway 18 (Figs. 12 and 19) so that they acquire an independent character thus avoiding loss of space in lifts, passages, staircases, court-yards, etc.

In short, the process includes forming a concrete flooring as a pavement with a width corresponding to the houses to be built, employing concrete mixers or other

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machinery mounted on rails 1 disposed next to planks 5; then papering the flooring, dividing same with separators 3 at distances equivalent to the height of the building to be erected, forming with said separators and planks 5 molds for the walls c which are made of concrete, and are assembled in a horizontal plane with their base on the fundamental flooring, these walls are molded so that upon being elevated to 90 degrees on their reinforcements 4, each pair forms a section corresponding to two floors. Said walls also possess means for accommodating brackets allowing the forming of an upper floor, while the upper part is covered with a roof constituted by beams f.

Undoubtedly, this embodiment of the invention can be modified as to details of construction and form without departing from the fundamental principles clearly specified in the following claims.

I claim:

1. A house construction method comprising forming a concrete floor, covering the floor with an isolating material and forming thereupon a horizontal mold, molding concrete walls in the horizontal mold with a row of perforations, elevating the walls to vertical positions, maintaining the vertical positions of the walls which thus define spaces therebetween, positioning supports in the perforations, positioning beams on the supports to divide said spaces into upper and lower portions, supporting a roof on said walls, erecting front and back closures adjacent said walls to close said spaces, and erecting internal separations in said spaces.

2. A dwelling construction method comprising form-

ing a mold on the ground and placing rails adjacent the mold in accordance with the shape of the mold, running a source of concrete over the rails to deposit and form in the mold a concrete floor, placing greased paper sheets on the concrete floor, spacing separators on the sheets by a distance corresponding to the desired height of walls for said dwelling, setting reinforcements adjacent said separators, positioning cores intermediate said separators, depositing concrete between said separators and permitting the concrete to set to form walls, elevating the walls with their respective reinforcements to vertical positions and propping the walls in said positions to define spaces therebetween, removing the cores and positioning supports in the vacated core positions, positioning beams on the supports to divide the spaces along a horizontal plane, forming a slanted roof on top of said walls, closing in the spaces with front and back closures, positioning internal separations in the spaces, and forming stairways in selected of the spaces.

References Cited in the file of this patent

UNITED STATES PATENTS

1,773,454	Fowler	Aug. 19, 1930
2,202,745	Muse	May 28, 1940
2,497,887	Hilpert	Feb. 21, 1950
2,686,420	Youtz	Aug. 17, 1954

FOREIGN PATENTS

842,708	Germany	June 30, 1952
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