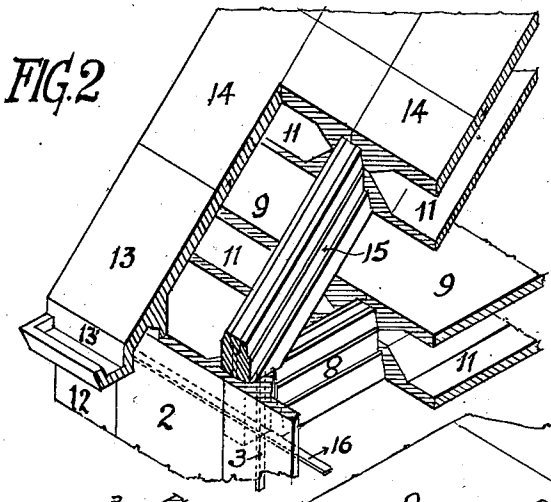
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INORGANIC BUILDING SYSTEM

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FIG.2



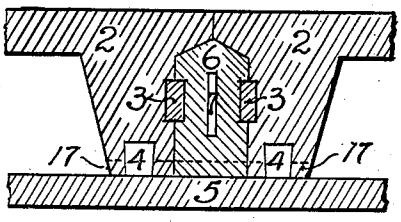


FIG.3

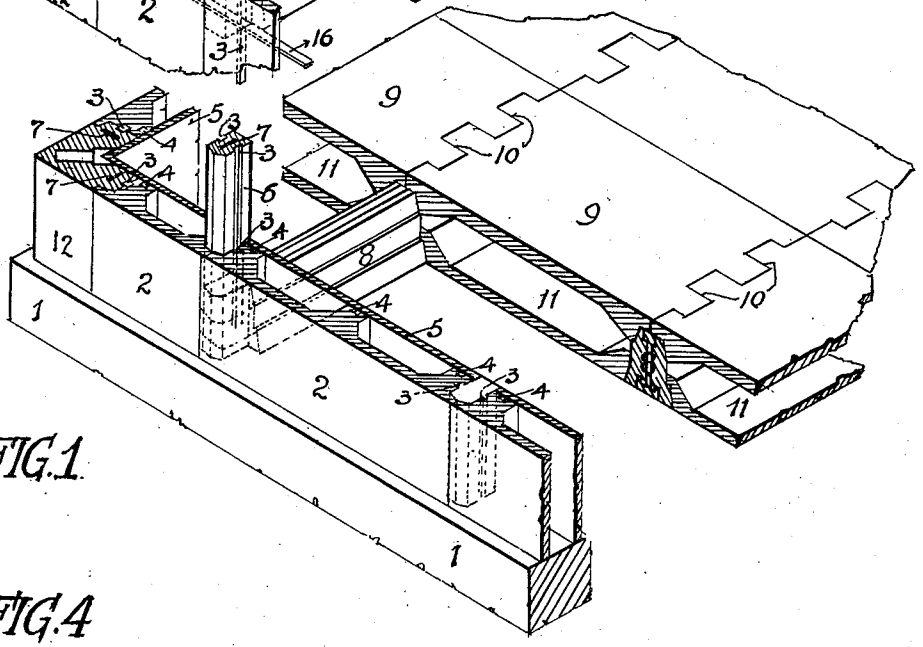
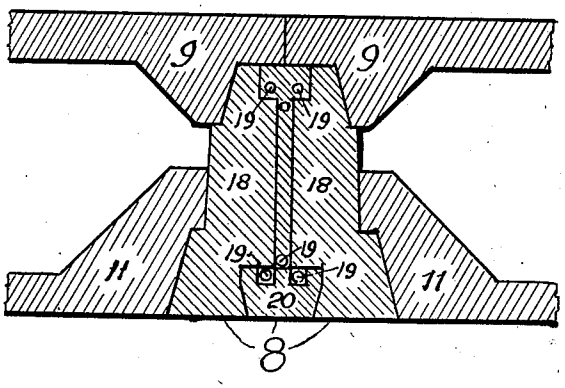


FIG.1

FIG.4



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FIG. 8

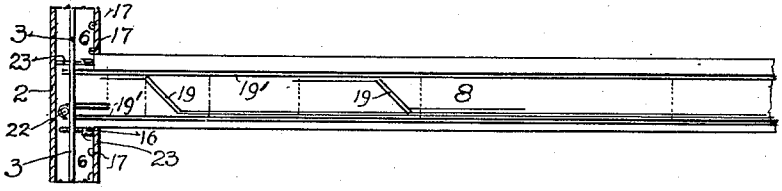


FIG. 7

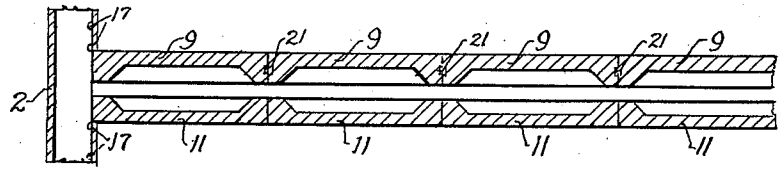


FIG. 6

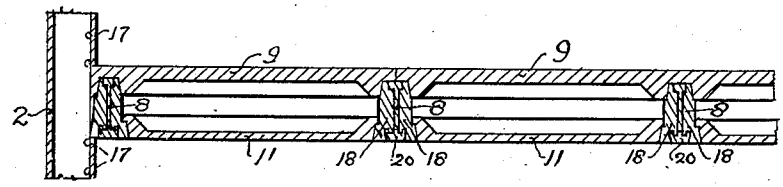
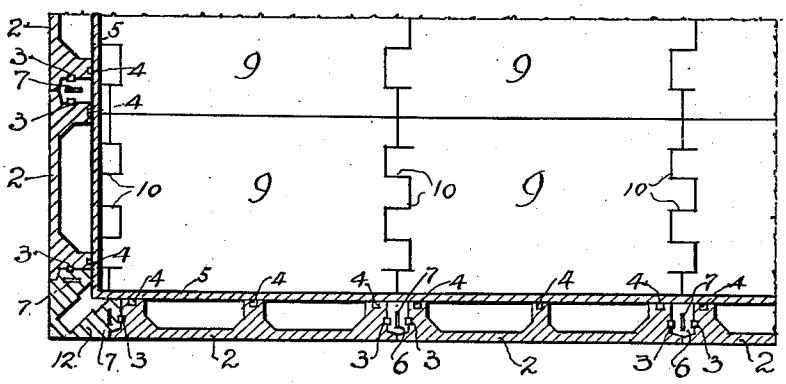


FIG. 5



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UNITED STATES PATENT OFFICE

2,109,265

INORGANIC BUILDING SYSTEM

Mortimer Foster, Bronxville, N. Y.

Application August 20, 1935, Serial No. 36,980

4 Claims. (Cl. 72—1)

The invention relates to a new method and new means for the preparation of the parts for and for the erection of buildings, and the objects of the invention, among others, are to provide for a structure composed entirely of inorganic materials, and with all metal used entirely embedded in and protected by an encasement of inorganic materials, thus making a structure indestructible, and to provide novel means for assembling and uniting the parts of such structure.

I attain these objects in the manner and by the method herein described, and illustrated in the accompanying drawings, in which—

Fig. 1 is a perspective showing the wall and lower floor construction;

Fig. 2 is a perspective showing upper floor, ceiling, and roof construction;

Fig. 3 is a horizontal section showing the assembly of the wall column and wall construction;

Fig. 4 is a vertical section showing the assembly and construction of the beams with floor and ceiling elements;

Fig. 5 is a horizontal section through the walls and a plan view showing the relations of the wall parts and of the interlocking floor pieces;

Fig. 6 is a vertical section through the beams and the floor and ceiling pieces;

Fig. 7 is a vertical section substantially at right angles to the section shown in Fig. 6;

Fig. 8 is a longitudinal vertical section showing the beam construction and the imbedded metal parts and anchorage in the walls.

Like numerals refer to like parts throughout the several views.

Fig. 1 shows the foundation or support of the structure 1, the wall pieces 2 with their slots for splines 3 and anchor slots 4 for securing the inside face pieces or wall "boards" 5, the wall posts 6 with their metal cores 7 with the slots for splines 3, the beam 8, the floor pieces 9 and their interlocking joints 10, the ceiling pieces 11, and the corner posts 12.

Fig. 2 shows the wall pieces 2, the corner post 12, the roof and eaves piece 13, 13' respectively, the roofing pieces 14, the roof beam 15 which is similar in construction to the floor beam and the horizontal metal tie piece 16 joining the heads of the wall posts.

Fig. 3 shows the wall post 6, the metal core of wall post 7, the splines 3, the anchor slots 4, the inside face pieces 5 and the horizontal pipe slots 17 in the inside face of the wall posts and wall pieces.

Fig. 4 shows the beam 8, the bottom block 20, the side 18, the imbedded metal 19, the ceiling piece 11, the floor piece 9.

Fig. 5 shows the wall pieces 2, the wall posts 6, the corner post 12, the splines 3, the anchor slots 4, the floor pieces 9 and adjacent parts.

Fig. 6 shows the wall pieces 2, the pipe slots 17, the beam 8, the beam bottom blocks 20, the beam sides 18, the floor pieces 9 and the ceiling pieces 11.

The horizontal ties 16 and the template 23 on top and bottom of each post section and between such sections and the interposed beam ends are flat metal pieces and the latter is cut out to conform to the contour of the post cross section.

Fig. 7 shows the wall pieces 2, the pipe slots 17, the floor pieces 9, showing the side interlocking joint 21 and the ceiling pieces 11.

Fig. 8 shows the wall pieces 2, the pipe slots 17, the imbedded metal 19, 19' the horizontal tie joining the heads of the posts 16, the anchor rods 22, the splines 3 and the metal beam template 23.

This method makes the greatest possible use of all the structural materials entering into the construction of the building; all material in the completed structure is working and all parts are proportioned to the stresses coming upon them. For instance where encasing material requires a safe working unit for stress of 400 lbs. per square inch, it is made up to that desideratum; if 120 lbs. unit stress is required it is so made. The imbedded metal is placed and designed in detail to take care of the forces acting upon it. Therefore as all materials are working, there is no substantial useless dead weight anywhere. In this combination of correctly prepared and proportioned materials with a complete freedom to the architect in his designs lies an element of novelty and this also makes possible the construction of a really fireproof housing or other building at a cost not greater than the cost of a reasonably well built wooden frame structure.

The various elements entering into the structure are preferably made of porous concrete, the use of the concrete having a predetermined proportion of voids, according to strength and weight requirements being contemplated, and this is reinforced by steel bars or other elements, such as those shown at 7 and 19, imbedded therein and extending to the extremities of such elements which engage with other elements. The said elements are molded in suitable adjustable forms giving them the desired size, proportions and details of form. The dimensions of the elements may, however, be varied by adjusting the forms

so as to produce the desired length, breadth and thickness in each element. Thus beams, rafters and posts of any required length and having any desired width and thickness may be molded to suit the size, proportions and required strength of the building and embody infinite variations in architecture, and in this molding process the illustrated steps, flanges, and slots or grooves for fitting the parts together and joining them and for the reception of keys or splines are formed, while the metal reinforcement cut to the required length is imbedded therein. The said elements are also preferably cast hollow to reduce their weight, provide insulating air spaces and also provide for the housing therein of pipes, wires, etc., and furnish air conduits.

When the units or elements are fitted together the joints are filled with a thin slurry which fills all interstices and unites them to form a unitary structure. This is preferably done as each course and as each floor and ceiling is laid, the slurry being poured in between the joints and allowed to spread over the abutting surfaces. An expansible slurry, of known formula, is used for this purpose, so that when it sets it will exert a certain degree of pressure on such surfaces and unite therewith. Where splines or metal tie pieces or the like are used, the interstices between them and the adjacent surfaces will also be filled with slurry.

The frames for doors, windows and other openings are formed in the same manner as the other parts herein described.

The designs of any competent architect can be carried out, in any exterior or interior materials desired. In planning the architect need give no consideration to the structural elements, or the modules, which govern the plan in prefabricated or factory made houses, thus permitting the design of buildings wholly for service, convenience and beauty, the methods used in the preparation of the parts being so flexible that no rigidly sized or proportioned elements dictate the design.

As all material elements entering into the design are inorganic, and as all chemical reactions are completed during the preparation processes, the structure may be regarded as indestructible by the elements of fire, air and water, and for the same reasons the structure is immune from destruction by insects or vermin.

The completed structure becomes homogeneous and owing to the cellular qualities in the encasing materials used, to the hollow and sealed design of the walls, floors and roofs, and to the complete imbedment of the encased steel, sound transmission is very low, and for the same reasons, heat losses and heat communication from the exterior by conduction are at a minimum.

No forms are required in the construction on the prepared foundation which may be of any suitable character. Preparation is made in the structure for the installation of any or all types of modern equipment, such as plumbing, heating, air conditioning, electricity, etc.

No forms or tool are needed for the erection, and no nails, bolts, screws or other fastening means. Nor is it necessary to cut, work, bore, perforate or otherwise operate upon the units or elements employed. It will be seen also that the said elements are so formed that when fitted together they unite and cooperate to resist weight, stresses and strains in all directions. The method being essentially a dry process, the disadvantages of exuding moisture so detrimental in the cast type of structure are avoided. The constructive procedure, being on a preferred foundation, is as follows: First lay the first course of the wall pieces, these being so shaped that they form a placement template for the setting of the floor beams and wall posts. Then set the floor beams, then the interlocking ceiling pieces, which are so designed that workmen may in safety lay all conduits, pipes and ducts before the floor pieces are placed. Then set the posts, and the pieces in the outer walls, these being so designed that their placement and the setting of the splines automatically trues the vertical position of the wall posts in all directions. Place at this time the frames in the door and window openings; set the metal horizontal ties at the tops of the wall posts; then the second tier of beams; then ceiling pieces. Proceed in the same manner with the building of the upper stories. Set the upper floor beams, the ceiling pieces, the roof rafters and the roofing pieces. When pipe and wiring and duct work is complete lay the interlocking floor pieces, then the interior partitions, and the inner surface of the outer walls.

This method is accurate and rapid. No heavy pieces have to be handled, and immediately on completion the structure is ready for use and occupancy.

Buildings of one, two, three or more stories may be erected, the design and construction of the wall posts and ties being modified to suit the height of the building.

What I claim is:

1. A building frame comprising molded units or elements of mineral material, embedded metal reinforcements therein, said units being of various sizes, dimensions and shapes, portions thereon and at different parts thereof shaped to interlock with complemental portions of other similar and dissimilar units, said portions being brought together and united by said complemental portions without other fastening means to form the building construction, a cementitious substance between certain of said portions at their abutting surfaces uniting such surfaces and metallic key members inserted between certain other of said portions and engaging said abutting surfaces.

2. A building frame comprising molded units or elements of mineral material, embedded metal reinforcements therein, said units being of various sizes, dimensions and shapes, portions thereon and at different parts thereof shaped to interlock with complemental portions of other similar and dissimilar units, said portions being brought together and united by said complemental portions without other fastening means to form the building construction, a cementitious substance between certain of said portions at their abutting surfaces uniting such surfaces and metallic key members inserted between certain other of said portions and engaging said abutting surfaces, certain of the said abutting surfaces having recesses therein for the reception of such key members, and certain of said units also having recesses therein extending across the same and forming with the recesses of adjacent units continuous ducts or voids.

3. A building frame construction comprising beams, floors, posts, walls and other parts of individual molded units of mineral material, said units having integral exterior portions formed to engage with complemental portions of other units to unite them when assembled to form a building frame, metallic splines inserted between

said portions, the said portions having complemental recesses to receive said splines.

4. A building frame construction comprising beams, floors, posts, walls and other parts of individual molded units of mineral material, said units having integral exterior portions formed to engage with complemental portions of other units to unite them when assembled to form a building frame, metallic splines inserted between said portions, the said portions having complemental recesses to receive said splines, and metal plates inserted between ends of post sections and interposed beam ends.

MORTIMER FOSTER.