W. S. PAINTER.

CONCRETE BUILDING.

APPLICATION FILED JUNE 5, 1919.

1,369,294. Patented Feb. 22, 1921.

2 SHEETS—SHEET 1.

Fig. 1

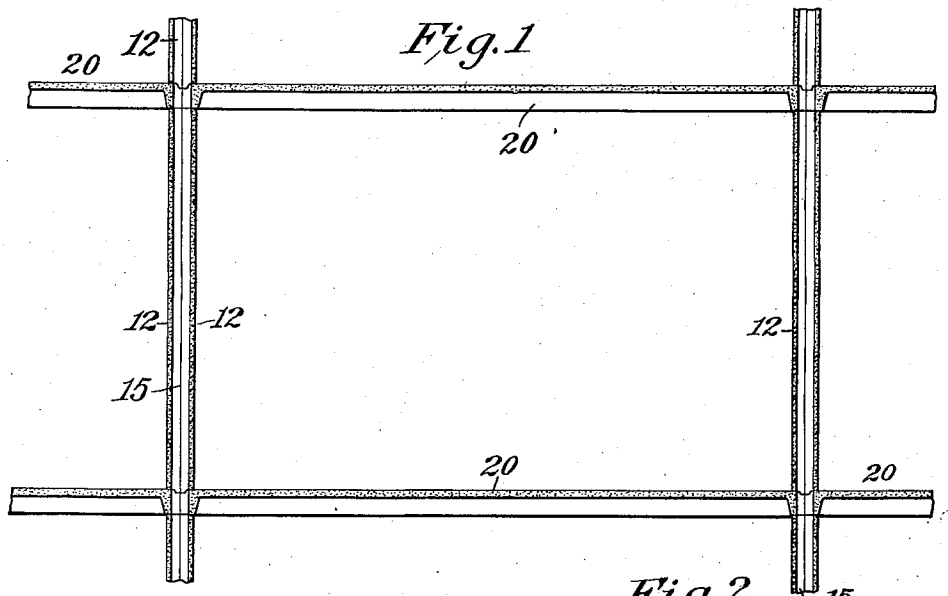


Fig. 2

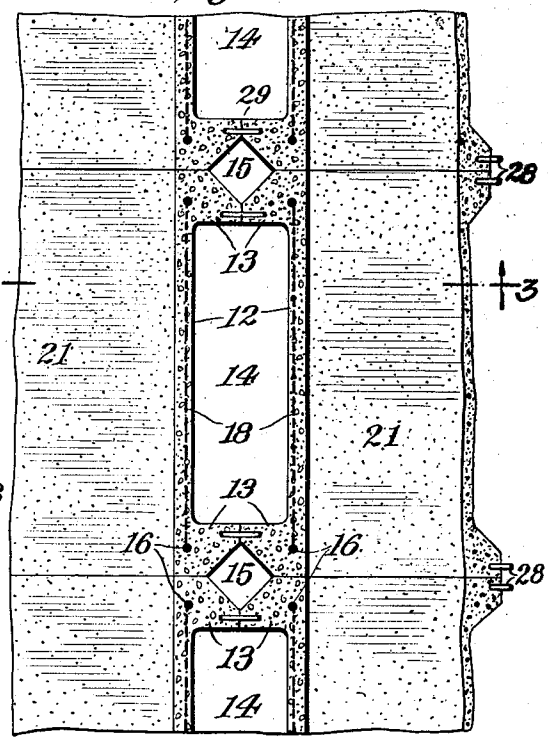


Fig. 3

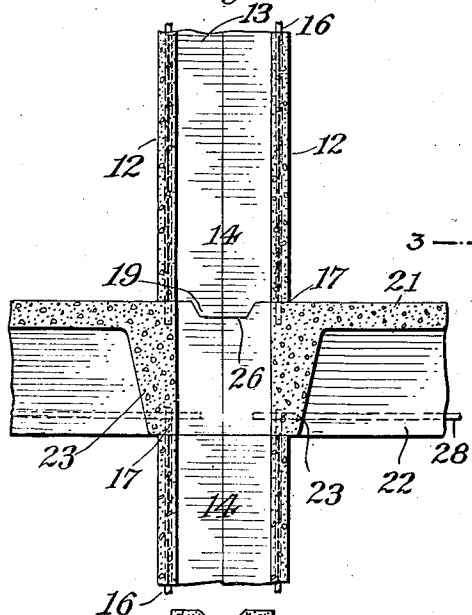
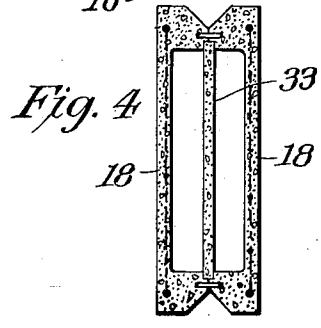


Fig. 4



Inventor

Walter S. Painter

By his Attorney

Joel B Liberman

W. S. PAINTER.

CONCRETE BUILDING.

APPLICATION FILED JUNE 5, 1919.

1,369,294. Patented Feb. 22, 1921.

2 SHEETS—SHEET 2.

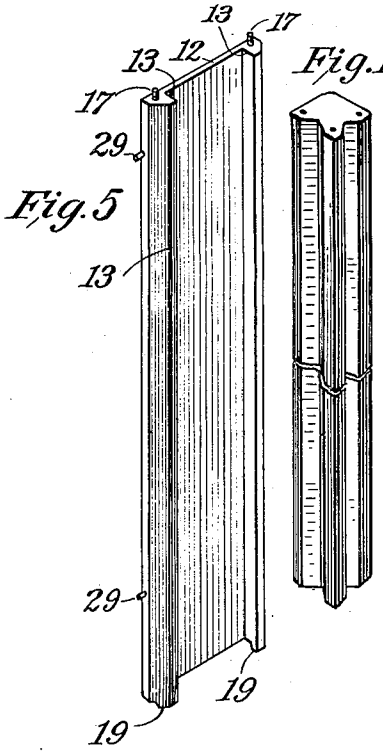


Fig. 5

Fig. 11

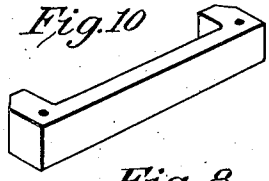


Fig. 10

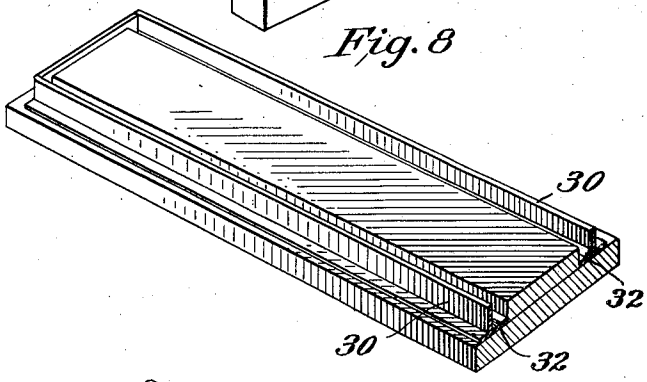


Fig. 8

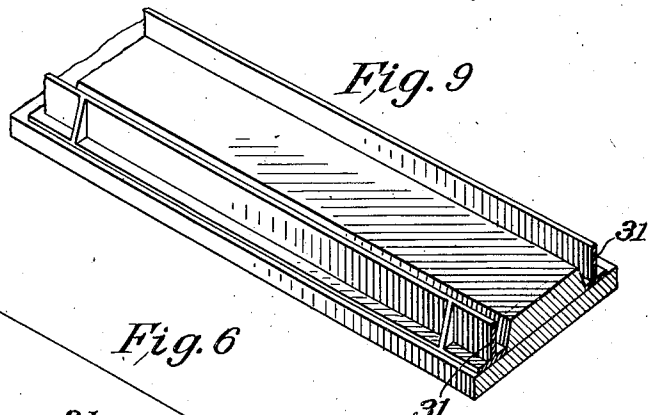


Fig. 9

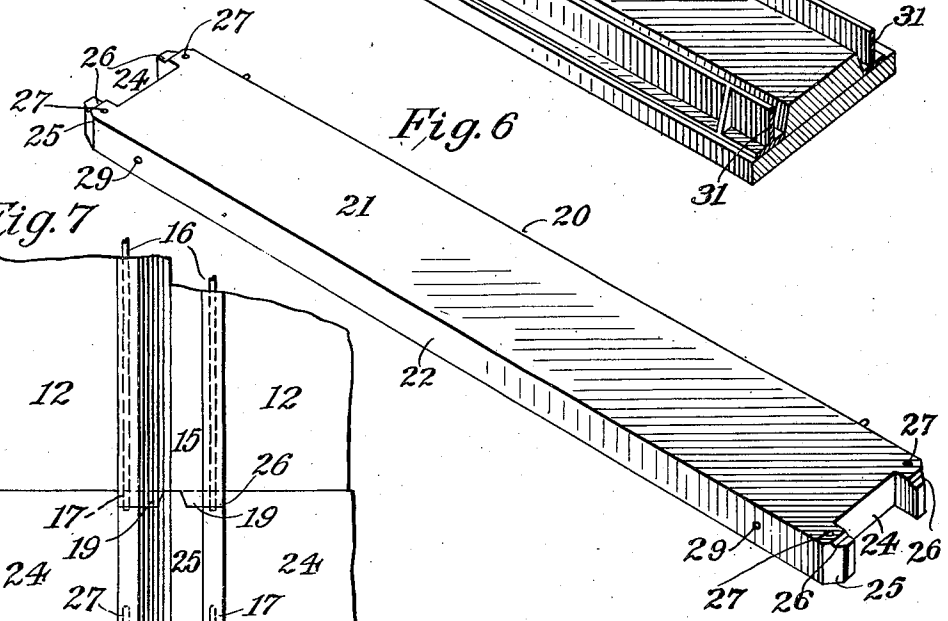


Fig. 6

Fig. 7

Inventor

Walter S. Painter

By his Attorney

Joel B. Liberman.

UNITED STATES PATENT OFFICE.

WALTER S. PAINTER, OF NEW YORK, N. Y.

CONCRETE BUILDING.

1,369,294. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed June 5, 1919. Serial No. 302,053.

To all whom it may concern:

Be it known that I, WALTER S. PAINTER, a subject of the King of Great Britain, residing in the borough of Manhattan of the city of New York, in the State of New York, have invented certain new and useful Improvements in Concrete Buildings, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention relates to the construction and erection of concrete buildings.

The salient feature of the invention resides in a construction in which the handling is minimized, the units of such construction being adapted to mechanical manipulation and standardized adjustment. The principal elements are wall and block or slab members of a suitable concrete equal in length to the entire height of the story of a building of which they form the walls, their thickness being that of the walls, and their width controlled by the weight which will admit of free and quick handling, and floor block or slab members of the same width as the wall blocks and in length somewhat in excess of the span of the room or compartment of which they form the floor. These wall and floor blocks will be cast in suitable molds, in the shop or on the ground of the building to be erected, complete and in finished condition, so that when set up in place, the building will, with the exception of trimmings, wall finishes, etc., be practically a finished piece of work. The various blocks may be cast in a single or a plurality of parts. The wall blocks are preferably cast in two parts, each comprising a flat trough-shaped wall section with inner extending side chamfered flanges formed of integrally cast beveled concrete studs, the edges of which abut when the parts are assembled, and by virtue of the bevel provide the minimum of contact for transmission of heat to the outside air, thus is provided a longitudinal air space the full height of the wall blocks. The side flanges are much thicker than the flat wall sections to provide necessary supporting strength to carry the floor section and other superimposed parts of the structure. Other vertical air spaces are provided by chamfers formed at the edges of the side flanges, which if they be planes will form a square opening diagonally arranged when adjoining blocks are set in place. Reinforcing rods passing lengthwise through the thick parts of the wall block may have their ends projecting beyond the ends of the block to act as dowels with the floor slabs, and these dowel ends may be screw-threaded to receive a counter-threaded socket of an erecting apparatus.

The floor blocks or slabs comprise a flat floor surface with downwardly extending flanges at the sides and ends, adequately reinforced; their ends being formed to correspond and aline with the air spaces between the wall surfaces of the wall blocks and the diagonally arranged square openings.

In carrying out the erecting feature of the invention, which involves the use of a special trolley system forming the subject of another application, two wall blocks are set up on end, spaced apart the span of the building or chamber and then a floor block or slab is placed on them, being properly located thereon by the dowels and other interlocking parts, thus is formed a section of the structure complete, which is built up of adjoining sections.

It is proposed to apply a suitable adhesive or binding material, as neat cement, to the adjoining or contacting surfaces of all parts of the structure, such surfaces being accurately and truly formed by the molds having metal surfaces to form said parts. Other features involved in practising this invention will be mentioned in describing the accompanying drawings, in which:

Figure 1 is a vertical section of a portion of a building embodying the features of this invention, showing the general arrangement of the wall and floor blocks or slabs.

Fig. 2, is a horizontal section of a portion of a wall looking down on a floor.

Fig. 3, is a vertical section of the junction of the wall and floor blocks, taken on the line 3, 3, Fig. 2.

Fig. 4, is a transverse section of a completed wall block showing a modification of the construction preferred for exterior walls.

Fig. 5, is an elevation, in perspective, of one half of a wall block.

Fig. 6, is a perspective view of one of the floor blocks or slabs.

Fig. 7, is a vertical view, looking toward the ends of floor blocks, at the central dividing line of the adjoining wall blocks.

Fig. 8 is a perspective view of a portion of a mold for forming the wall blocks.

Fig. 9 is a similar view of the floor block forming mold.

Fig. 10, represents a small block adapted to fill the space in exterior walls at the ends of the floor blocks, and

Fig. 11, represents a corner strip adapted to be applied to and fill the corner space where angularly arranged exterior walls meet.

The concrete wall blocks are composed of two similarly molded parts which when assembled form a substantially rectangular block the length or height of which equals the full height of the story. They are comparatively narrow and being in finished condition or completed when molded their flat outer surfaces, when they set up side by side constitute smooth wall surfaces, the interior wall surfaces being readily putty or sand finished to receive paint, paper or calcimine. It is proposed to waterproof the exterior walls which may have any suitable exterior finish, as stucco, artificial stone, tile inlays, etc.

Each part of a wall block has throughout its length a comparatively thin flat wall portion 12, along the longitudinal edges of which are formed thicker flanges 13, whose depth is equal to one-half the thickness of the wall, so that when the two parts are placed together with the edge faces of the flanges in intimate contact the thickness of the completed blocks is that of the walls of the building with a vertical air space 14, between the flat sides 12. It is proposed to chamfer the outer edge corners of the flanges 13, thereby forming between the side edges of adjoining wall blocks an additional air space 15, the cross section of which will be a square diagonally arranged if said chamfers be flat surfaces, as shown in Fig. 2. The wall block shown in Fig. 4 is provided with a central portion 33, which consists of flat plates held in grooves formed in the inner sides of the flanges 13. Such blocks are preferred in erecting outside walls.

These wall blocks may be reinforced in any desired manner as for instance by steel rods 16 extending vertically through them, the ends of which by projecting beyond the upper and lower end faces of the blocks may be utilized as dowel pins 17, to assist in locating and locking the parts of the structure together. The dowel pins 17 at the tops of the floor blocks may, furthermore, be utilized as means for handling blocks, by forming screw-threads thereon, as indicated in Fig. 5, adapted to receive screw sockets of an erecting apparatus. Other parts of the block may be reinforced, as instance the flat wall parts 12, by wire netting, etc., indicated by dotted lines 18. As a further means for holding the wall blocks in set position lugs 19, are formed on the lower ends of the side flanges 13, adapted to coact with recesses formed in the floor blocks as hereafter described.

The floor blocks 20 are long enough to cover or extend over the span of a building, or the compartments thereof, and to rest on the tops of the wall blocks half way across the same, as indicated in Figs. 1, 2 and 3. The widths of the floor blocks and wall blocks are the same, so when a floor block is seated on the tops of wall blocks oppositely located in the side walls of a building, or compartment thereof, what may be considered as a section of the building will be fully completed. The floor blocks 20, are composed of a flat upper plate 21, and downwardly extending side and end flanges 22 and 23 respectively, with recesses 24, in the end flanges corresponding in shape and size to the space between the flanges 13, of each half of a wall block, so that with the parts assembled, as seen in Figs. 1, 2 and 3, the air space 14 will be uniformly continuous throughout the height of the building.

The corners of the end flange parts forming the ends of the recesses 24 are chamfered, as at 25, to correspond to the chamfers or beveled corners of the flanges 13, of the wall block; thus the square diagonally arranged air spaces 15, are also continuous throughout the height of the building, and recesses 26 are formed in the upper sides of these flange parts to receive the lugs 19, on the lower ends of the wall blocks, as seen in Figs. 3 and 7. Holes 27 are formed in the floor blocks to receive the dowels 17, of the wall blocks. Reinforcing rods 28, and other well known reinforcing material may be molded in the concrete floor blocks. Where it is thought advisable to increase the supporting strength of the walls, the square openings 15 may be filled with concrete reinforced with steel rod in the lower stories of the building. Dowel pins may be applied in the contacting faces of the various parts, where desirable, as at 29. It is proposed to apply to all contacting surfaces of the various parts a binding material, as for instance neat cement, which may be brushed on such surfaces, after they are adequately moistened, at the time the various parts are assembled to insure all joints being perfectly sealed.

The molds may be made of wood or partly of wood and partly of metal; for instance all of the contacting surfaces where joints occur may be made of steel pieces or malleable iron. This form is shown in the drawings in which 30, 31 will form the parts of the two molds, in Figs. 8 and 9, against which the contacting surfaces of the longitudinal flanges and side faces of the blocks will be cast. These parts can also be made of hard wood. Fillets 32 of wood, or other suitable material, are secured to the inner

corners of the mold Fig. 8, to form the chamfers on the side flanges 13, of the wall blocks.

The floor surface of the floor blocks will be troweled smooth where concrete floors are to be used and leveled off, when covered with wood floors. Ceilings where required will be applied in ordinary manner, but in general ceilings will not be required as the floor slabs will be finished before they are erected in place.

It will be understood the wall and floor blocks can be suitably fashioned for other than right angled structures.

The exterior surface blocks used for the outside of the house may be single and furnished with artificial stone placed and worked while the concrete is in the form to get the greatest possible adhesion of any foreign material to the concrete. A handsome decorative effect may be obtained by embedding tiles in the concrete, in definite designs and patterns, molded raised surfaces or brackets may be used by placing separate cast blocks in concrete forms and pouring in the concrete.

The hollow spaces in the walls will be used for chimneys, hot air spaces, heating purposes, and the like, having tile linings for chimney purposes and similar appurtenances for each special purpose for which the space is used. It is contemplated to build the roof in sections formed on the ground, and placed in position by the aerial cable lines in such fashion as to eliminate the necessity of labor other than the placing of the sections on the building.

With reference to the doors and windows these will be erected in place as the erection proceeds. The doors and windows will have rabbeted jambs, which will lock over the partitions. The door frames will be complete with jambs, heads and sills and the doors hung in position and the frame braced to admit of ready handling during erection. This is more completely outlined in the application filed this day and hereinbefore referred to.

Not only the lighter type of building may be formed according to the present invention but it is also designed for office, loft and other buildings up to any story in height by virtue of the fact that the hollow spaces in the wall blocks can be filled to any degree required for strength. These air spaces in the blocks can be made of any dimension to give a substantial reinforced concrete column, one that could be reinforced to any desired degree necessary to carry the superimposed load, in this way developing a frame structure built of reinforced concrete to receive reinforced concrete.

I claim:

1. A building comprising; trough-shaped concrete block members, two of which form walls capable of supporting ordinary superimposed floor and wall loads, when set up in pairs, extending the entire height of the story, inverted trough-shaped floor slab members in length equal to the span of the building or room with ends shaped to correspond with the shape of the wall slabs, said wall blocks being set up on end facing each other in pairs in the opposite walls and supporting a floor slab member placed on the tops of said wall blocks with its end seated half way the thickness thereof, thus constituting a section of the building or room, and forming a multiple of hollow spaces continuously through the full height of the building.

2. A concrete wall block consisting of two similar trough shaped slabs extending the full story height, such slabs having flat plates and side flanges of integrally cast beveled concrete studs of sufficient size and strength to support floor members placed at the end of the slabs in alinement with the wall blocks, the slabs forming a continuous hollow shaft when placed together, and the bevel of such studs being of such shape that when two pairs are placed in contact end to end a complete stud with a hollow center is formed.

3. A concrete wall block consisting of two similar trough shaped slabs extending the full story height, such slabs having flat plates and side flanges of integrally cast beveled concrete studs of sufficient size and strength to support floor members placed at the end of the slabs in alinement with the wall blocks, the slabs forming a continuous hollow shaft when placed together, and the bevel of such studs being of such shape that when two pairs are placed in contact end to end a complete stud with a hollow center is formed, the central hollow shaft of the block being filled with reinforced concrete to form a solid concrete building unit capable of supporting heavy loads.

4. A concrete wall back consisting of two similarly formed beveled trough-shaped frames formed with a comparatively thin plate and side flanges formed of integrally cast beveled concrete studs of sufficient size and strength to support ordinary superimposed loads, adapted to be placed in pairs and having an intervening plate thereby forming two hollow compartments one of which may be filled with concrete to provide additional strength for extraordinary superimposed loads, the other remaining hollow and forming an air space for the prevention of radiation of heat to the outside.

This specification signed this 28th day of May, A. D. 1919.

WALTER S. PAINTER.