

H. E. WILLSIE.
 CONCRETE BUILDING BLOCK.
 APPLICATION FILED MAR. 15, 1909.

1,234,244.

Patented July 24, 1917.

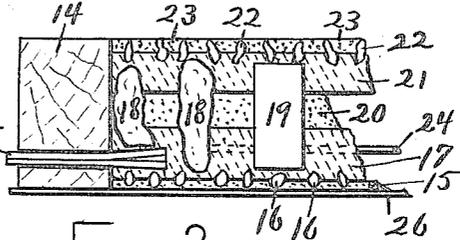
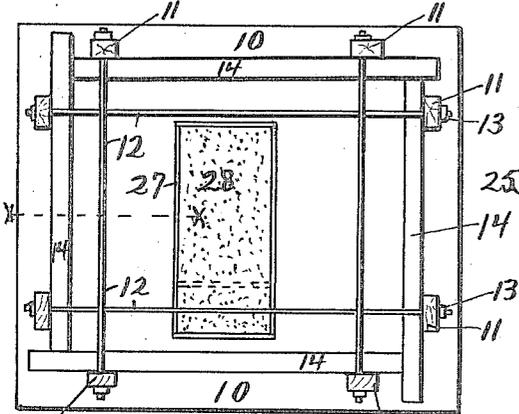
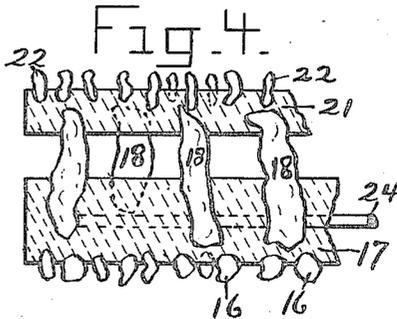
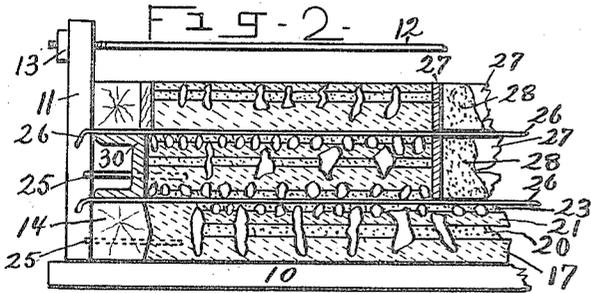


Fig. 3.

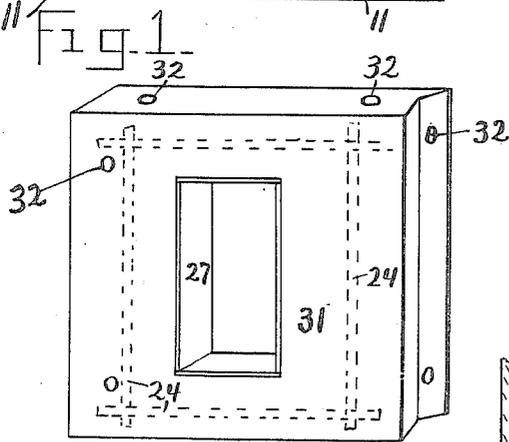


Fig. 5.

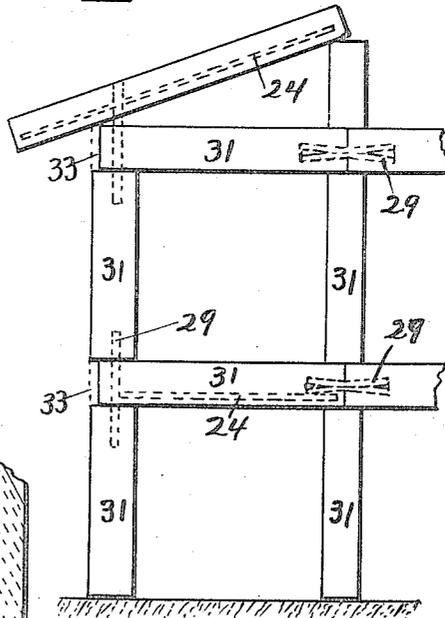


Fig. 7.

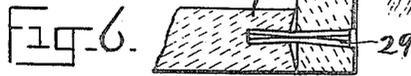


Fig. 6.

WITNESSES:
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UNITED STATES PATENT OFFICE.

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CONCRETE BUILDING-BLOCK.

1,234,244.

Specification of Letters Patent.

Patented July 24, 1917.

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To all whom it may concern:

Be it known that I, HENRY E. WILLSIE, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Concrete Building-Blocks, of which the following is a specification.

My invention relates to the construction of concrete buildings, and the objects of my invention are: to provide a method of manufacturing and hardening building blocks without the use of expensive forms, and to provide, as the product of such manufacturing method, concrete building blocks that may be strongly secured together in a finished building, presenting, then, a wall with air spaces and with surfaces adapted to securely retain a plaster coat.

It is well known to concrete workers that greatest strength and density are obtained in concrete blocks by allowing a "creamy" or "wet" mixture to remain undisturbed, with a supply of moisture, for more than three weeks. This procedure, however, is not now commercially available, owing to the large number of forms or molds that would be required for the construction within a reasonable time of even a small cottage.

It has been customary in building a hollow concrete wall to bind the inner and outer slabs together with concrete webs. As this construction permits moisture to follow the webs to the inside wall, metal bonds have been used in the place of the concrete webs. While, by this means, a dry inside wall is obtained, it has been found that the metal bonds, coming into contact with air and moisture in the air space, rust away, leaving the inner and outer walls unsupported by each other.

In finishing a concrete wall it is usually desirable to plaster either the inside or outside or both surfaces of the wall. But it is well known to cement workers that it is difficult to make a plaster coat adhere permanently to a concrete wall. Even if the wall has been previously well wetted and scored the plaster is apt to drop off in a few years.

In constructing a wall of the usual concrete blocks or tiles the commercial advantages of the cheap block is largely offset by

the labor cost of placing the small blocks in the wall. And such a wall is usually difficult to reinforce with metal rods.

I overcome these difficulties and I attain the objects of my invention by the means shown in the accompanying drawings in which similar characters refer to similar parts throughout the several views.

Figure 1 is a plan view of a building block in its molding form; Fig. 2, a cross section of the same on the line $x-w$; Fig. 3, a cross section of a portion of a form and a block, showing method of construction; Fig. 4, a cross section of a portion of a completed block; Fig. 5, a perspective view of a building block; Fig. 6, a horizontal section showing manner of uniting two blocks to form a corner; and Fig. 7, an elevation diagram showing manner of uniting blocks to form a building.

To manufacture blocks according to this method, I place a platform, 10, on level ground and erect on the platform posts, 11, 11, secured and adjusted at the tops by the bolts, 12, 12, and the nuts, 13, 13. Inside these posts I lay four beams, 14, 14, of the thickness the concrete block is to be. Inside the beams, on the platform, is spread a layer of sand, 15 (Fig. 3) from one-quarter to one-half an inch in depth. Into this layer of sand is pressed gravel or small broken stones, 16, 16, having diameters greater than the depth of the sand. A layer of concrete, 17, is then poured into the form. Into this layer of concrete is forced larger stones, 18, 18, or vitrified brick, 19. Next is placed a layer of dry sand, 20, of less depth than the height of the projections of the bonding stones, 18. A second layer of concrete, 21, is then poured to surround and cover the upper portions of the stones, 18. Into the upper face of this layer of concrete, 21, is pressed to the depth of half their diameters the gravel or small stones, 22, 22. Then a layer of dry sand, 23, levels up the form.

When this block has hardened for three weeks, or more, and is raised on edge, the dry sand falls away leaving the concrete layers bonded together by the large stones, and provided with gravel or broken stone plastering surfaces as shown in Fig. 4. bonding stones will not readily convey moisture from the outside wall to the inside wall and they are as durable as the concrete.

The partly embedded gravel is securely cemented to the concrete wall and provides excellent means for permanently securing a plaster coat to the wall.

- 5 Metal reinforcing rods, as 24, may easily be placed where desired in the wet concrete as it is poured, and the rods do not need to be tied into place as is now customary. This ease of placing the reinforcement effects a saving in labor expense. To provide a tapering plug hole in the concrete block, a removable tapering plug, 25, composed of metal and rubber, projects from the beam, 14, into the concrete.
- 10 To manufacture a second block, a layer of paper, or cloth, 26, is placed on the first block; a second set of form beams is placed on the first set, and the described process repeated, as shown in Fig. 2. This process of building one block on another may be repeated until there are twenty or more blocks in a pile. After a couple of days the outside posts and beams may be removed for the building of another pile of blocks.
- 15 A window or door opening may be inserted in a block, as shown in Fig. 2, by placing the frame, as 27, in the desired position in the form before putting the block materials in the form. The frame should be filled with sand, as 28.

When an even gravel surface is not desired it is practical to omit the separating layers of paper, 26; the sand layers acting as a separating medium. And the small gravel layers and the sand layers may be omitted when desired. The edges of the blocks may be conformed by beams of suitable cross section. The separating paper may be conformed by raised or depressed designs to ornament the concrete surface.

Channel irons, as 30, may be used for form beams. The floor slabs, when assembled in a building, do not come quite flush with the outside of the wall slabs, thus providing a space, 33, to receive plaster or wood ornamentation.

While these blocks may be made in small sizes it is desirable for strength and economy in house building to make them in large sizes so that single blocks may extend in height from floor to ceiling, or, as floor or roof slabs, extend from wall to wall, as shown in Fig. 7. In this way a house may be composed of interchangeable reinforced units, 31, 31, strongly held together by metal wedge bonds, as 29, 29, for which holes, 32, 32, are provided. A practical size for the blocks or units, 31, 31, is about nine feet by twelve feet. A block of this size may be lifted by a derrick from the construction pile to its place in the building, saving a large part of the labor expense.

As the outside of the block shown in Fig. 4 has a "pebble dash" finish it need not be plastered, for architects frequently specify

such a finish at considerable extra expense. Or if this "pebble dash" finish is wetted and brushed with a cement wash, colored if desired, a "splatter dash" or "slush dash" finish will be cheaply obtained.

While this method is simple and may be easily practised by the unskilled, and the materials used are common in most localities, yet I believe both the method and the product are novel and important because they provide means of constructing strong, enduring, fireproof, artistic, moderate sized houses at costs considerably less than the present costs of building such houses.

Having now described my invention, what I claim and desire to secure by Letters Patent, is:

1. The method of manufacturing concrete building sections in vertical piles, faces of the sections being manufactured in a horizontal position, which consists in the following steps: subsequent to erecting side supporting columns with suitable tie rods, 1, placing forms to determine the ceiling, floor and side edges of a section, 2, filling this form with concrete and allowing the concrete to set, 3, placing a flexible separating medium on top of the formed section; and repeating these steps one above the other until the desired number of sections are made in a vertical pile with the concrete sections substantially one above the other.

2. The method of manufacturing concrete building blocks in vertical piles, the faces of the sections being manufactured in a horizontal position, which consists in the following steps: 1, placing a platform to determine the lower face of the first section, and erecting side supporting columns with suitable tie rods, 2, placing forms to determine the ceiling, floor and side edges of a section, 3, filling the form with concrete and allowing the concrete to set, 4, placing a separating medium on top of the concrete to determine the lower face of the next section to be made; and repeating steps 2, 3, 4 until the desired number of sections are made in a vertical pile with the concrete sections substantially one above the other.

3. The method of manufacturing concrete building sections in vertical piles, the faces of the sections being manufactured in a horizontal position, which consists in the following steps: 1, placing a platform to determine the lower face of the first section, and erecting side supporting columns with suitable tie rods, 2, placing forms to determine the ceiling, floor and side edges of a section, 3, placing a window or door frame within the form and filling the frame with sand or other loose material, 4, filling the form outside the frame with concrete and allowing it to set, 5, placing a separating medium on top of the formed section, and repeating steps 2, 3, 4, 5 until the desired

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number of building sections are made in a vertical pile with the concrete sections substantially one above the other.

4. The method of manufacturing concrete building sections in a vertical pile which consists of the following steps: 1, placing a platform to determine the lower face of the first section, 2, placing forms to determine the edges of this section, 3, partly filling this form with concrete, 4, partly embedding bonding blocks in the wet concrete, 5, partly surrounding the projecting portions of the bonding blocks with sand, 6, filling the form with concrete, 7, placing a separating medium on this section; and repeating steps 2, 3, 4, 5, 6, 7 until the desired number of sections are made in a vertical pile.

5. The method of manufacturing concrete building sections in vertical piles which consists of the following steps: 1, placing a platform to determine the lower face of the first section, 2, placing forms to determine the edges and thickness of the section 3, placing within the form a thin layer of a sand a gravel mixture, 4, filling the form with concrete and allowing the concrete to set, 5,

placing a separator on top of the formed section, and repeating steps 2, 3, 4, 5 until the desired number of building sections are made in a vertical pile.

6. The method of manufacturing concrete building sections in vertical piles, the faces of the sections being manufactured in a horizontal position, which consists in the following steps: 1, placing a platform to determine the lower face of the first section and erecting side supporting columns with suitable tie rods, 2, placing forms to determine the ceiling, floor and side edges of a section, 3, placing concrete within the form, 4, partly embedding a layer of gravel in the wet concrete and leveling up the form with dry sand, and repeating steps 2, 3, 4 until the desired number of building sections are made in a vertical pile with the concrete sections substantially one above the other.

Signed at New York in the county of New York and State of New York this tenth day of March A. D. 1909.

HENRY E. WILLISIE.

Witnesses:

A. MOONEY,
J. B. SPERRY.