

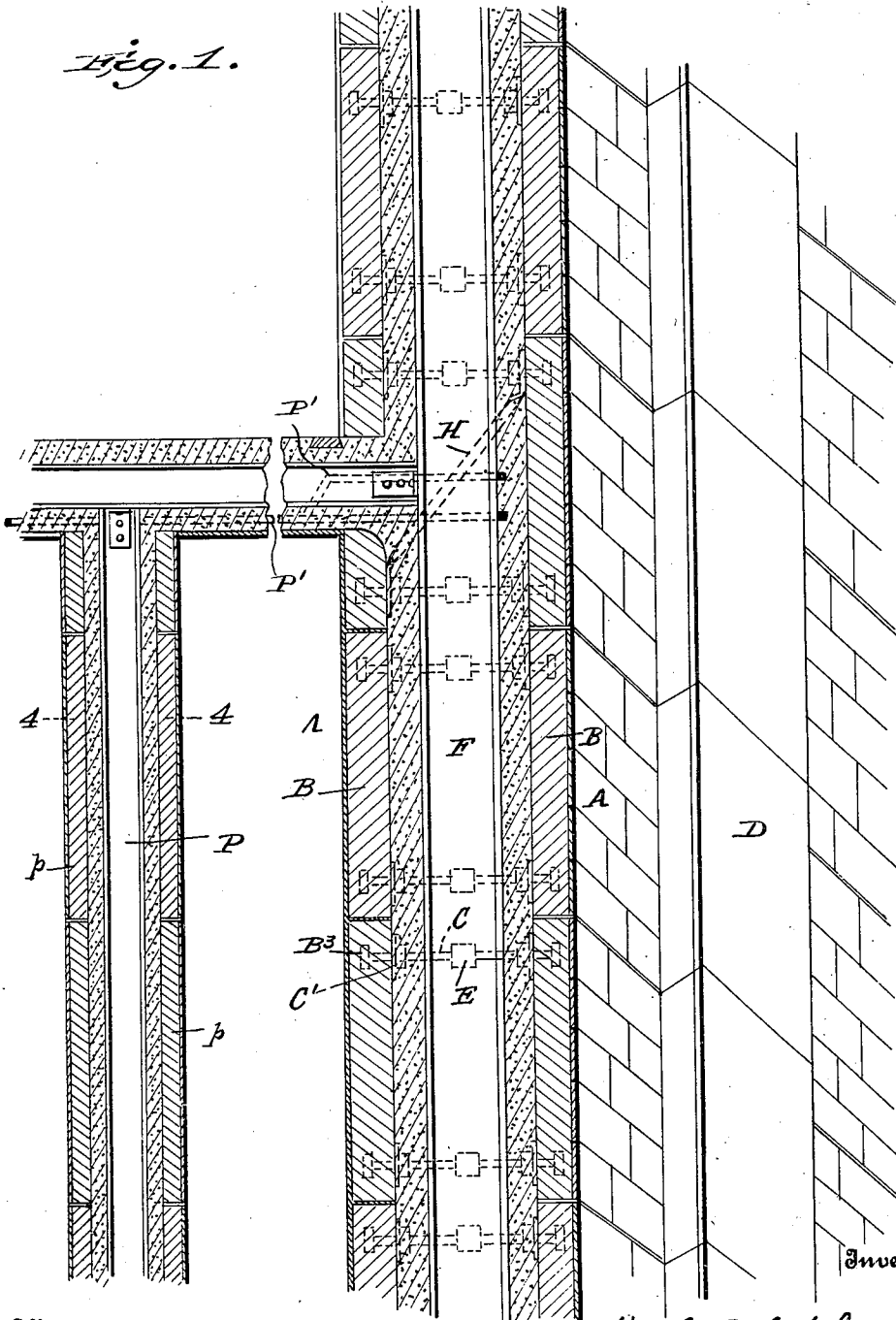
H. B. COPELAND.
BUILDING CONSTRUCTION.
APPLICATION FILED SEPT. 2, 1910.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.

1,050,428.

Fig. 1.



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Witnesses

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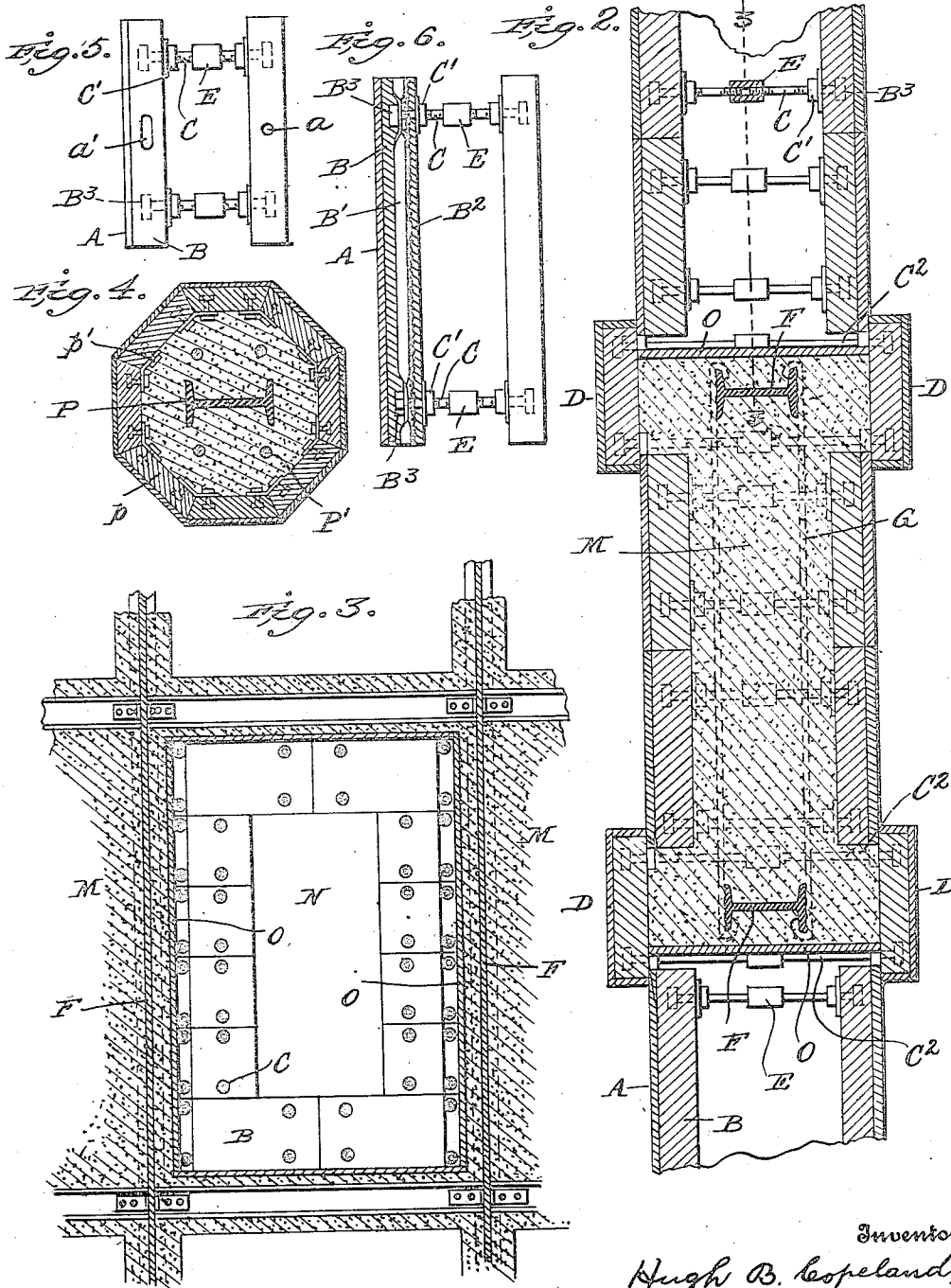
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BUILDING CONSTRUCTION.

1,050,428.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed September 2, 1910. Serial No. 580,243.

To all whom it may concern:

Be it known that I, HUGH B. COPELAND, of Denver, in the county of Denver, State of Colorado, have invented a certain new and useful Improvement in Building Construction; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to concrete building construction in which a wall having inherent stability is produced without the employment of temporary external or internal forms.

It has been heretofore proposed to dispense with the employment of temporary external forms and to make use of slabs for retaining the plastic cementitious material, said slabs becoming incorporated in and forming a permanent part of the wall. In such prior structures however there was little or no latitude allowed either for aligning and positioning the slabs in relation to each other or for permitting of pilastered or ornamental facing construction, nor has provision been made whereby the facing slabs could be rigidly yet adjustably connected together in such manner that the thickness of the wall could be varied or the slabs applied to previously erected metallic framing or reinforcement members.

One of the objects of the present invention is to provide a construction whereby the aforesaid difficulties will be eliminated, making it possible to produce a concrete structure of pleasing architectural design with the use of slabs of practically uniform dimensions and construction and to embody in a building, a wall of this construction where it is desired to employ metal framing or reinforcement members which must be erected preliminarily to the formation of the inclosing walls themselves.

Referring to the accompanying drawings: Figure 1 is a sectional perspective of a portion of the wall of a building constructed in accordance with the present invention and showing at the left hand side a pillar or floor support. Fig. 2 is a section in a horizontal plane through a portion of a wall constructed in accordance with the invention. Fig. 3 is a section in a vertical plane substantially on the line 3—3, of Fig. 2, and showing a window opening in the wall.

Fig. 4 is a section in a horizontal plane through the pillar substantially on the line 4—4, of Fig. 1. Fig. 5 is an end elevation of a pair of slabs anchored together and occupying the correct relative position for use in a wall constructed in accordance with this invention. Fig. 6 is a plan view, partly in section, of the connected slabs shown in Fig. 5.

Like letters of reference in the several figures indicate the same parts.

For the construction of a wall in accordance with the present invention, slabs are preliminarily prepared of reinforced concrete and where the slabs are to form the permanent facing of the wall without painting, plastering or other finish, they are provided with a permanent facing of tiles, such, for instance, as indicated by the letter A, and a backing B of concrete in which packing there is incorporated longitudinally extending reinforcing members B' and expanded metal or wire mesh B² near the inner faces of the slabs. The reinforcing members B', or screw threaded nuts B³ thereon embedded in the concrete slabs, are adapted to form anchor retaining members whereby the anchors for the slabs may be rigidly but adjustably connected with the slabs for a purpose which will presently appear. The slabs as thus constructed may have marble, tile, glass or other prepared surface finish on one face and they are adapted to be assembled in the wall in pairs, spaced apart a sufficient distance to receive cementitious concrete filling in a plastic condition. The slabs are rigidly connected so as to be separable from each other by rigid adjustable anchors, preferably in the form of short threaded rods or bolts C, the ends of which pass into the inner face of the slabs and are screwed into the nuts B³ before mentioned. Jam nuts C' on the bolts or rods C are adapted to be clamped against the inner faces of the slabs, thereby forming a rigid lock connection with the slab and permitting each individual slab to be positioned transversely in the wall so as to properly aline with previously positioned slabs, or where desired the slabs may be spaced apart sufficiently far to form ornamental designs in the wall. By the substitution of longer anchors, as shown at C², in Fig. 2, the slabs may be overlapped to form pilasters, as shown at D in Figs. 1 and 2. The anchors C may, if desired, be formed in sections and

the sections connected rigidly together by intermediate threaded sleeves E, thus providing a convenient means for effecting the relative lateral adjustment of the slabs, or
 5 a convenient means whereby the slabs may be connected together rigidly but separately, particularly where they are to be located on opposite sides of previously erected metal framing or reinforcement, such as the I-beams F, constituting the framing of the building. Not only do the anchors themselves form metallic reinforcing members but where desired they may constitute the supports for other reinforcing members
 10 such, for instance, as indicated at G, in Fig. 2, or they may serve for the rigid attachment of diagonal reinforcing members particularly at the floor lines, as indicated at H in Fig. 1.

20 In building a wall in accordance with this invention, the slabs in each side of the wall are laid edge to edge and for connecting their proximate edges they may be provided with edge chambers such as shown in
 25 Fig. 5 at *a* or *a'* for the reception of pins. The chambers in the proximate edges of adjacent blocks are preferably made one round as at *a* for holding the connecting pin, and the other elongated as at *a'*, whereby a
 30 sufficient latitude is provided for the movement of the pins in bringing the slabs into alinement or for allowing the slabs to settle in the mortar or cement placed between the slabs. The slabs are all positioned in
 35 the wall and adjusted with relation to each other to give proper surface conformation or contour and will be held rigidly in such position by the connecting anchors thereby forming permanent molds for the reception
 40 of the cementitious concrete M which is poured in and allowed to set for the completion of the permanent wall.

Where it is desired to form window openings N in Fig. 3, or where it is desired to
 45 form cells in the wall, this may be accomplished by utilizing the rigid anchors for supporting cement retaining partitions O thus excluding the plastic cementitious material from those portions of the wall where
 50 it is desired to form the cells or openings through the walls. This construction permits the walls to be formed solid and reinforced by metal reinforcing members throughout those portions intended to bear
 55 the building loads and cellular or hollow throughout those portions where no loads are to be borne but at the same time the slabs forming the sides of the wall, both in the solids and in the cellular portions are
 60 rigidly connected together so as to make a structure of great strength and not liable to be cracked or broken by irregular settlement resulting in the production of shearing strains in the walls.

65 The invention is particularly adapted for

use in situations where the slabs on opposite sides of the wall inclose metal reinforcing members and thus readily lends itself to the formation of supporting pillars, which pillars include in their construction vertically
 70 arranged metal posts or columns. Thus as shown in Figs. 1 and 4 the vertical metal column P is entirely surrounded by slabs *p* placed edge to edge and rigidly connected by the adjustable anchors *p'* thereby forming a permanent mold for the reception of
 75 the plastic cementitious concrete in which the column P and the additional reinforcing members P' are embedded. With this construction, the facing slabs are all adjusted in their permanent positions and the exterior finished at one operation during the erection of the structure. The slabs are permanently and rigidly connected so that
 80 they cannot be displaced by the pressure exerted by the plastic filling and the latter when set, unite the whole structure solidly into a monolith completely embedding and protecting all of the metallic elements.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In concrete building construction the combination with internal metal reinforcing members, oppositely disposed concrete
 95 slabs inclosing said reinforcing members and rigid anchors rigidly connected with and forming rigid connections between the slabs inclosing the reinforcing members said anchors embodying means whereby
 100 slabs connected by the anchors may be separated for application on opposite sides of the metal reinforcing members and adjusted with relation to each other to position each
 105 slab independently of the other and cementitious concrete confined by the slabs and in which the reinforcing members and anchors are embedded.

2. In building construction, a wall embodying a plurality of concrete slabs spaced
 110 apart to form the inner and outer sides of the wall, the slabs forming each side being arranged edge to edge and transversely extending rigid anchors rigidly connected with and forming rigid connections between
 115 oppositely disposed slabs said anchors being formed in separable sections adjustably connected; whereby the slabs may be separated for application and adjusted on opposite
 120 sides of reinforcing members or framing and will themselves form retaining walls or molds for a filling of plastic cementitious material.

3. In building construction a wall embodying a plurality of concrete slabs spaced
 125 apart to form the inner and outer sides of the wall, the slabs forming each side being arranged edge to edge and having edge key receiving chambers therein transversely enlarged to permit of relative adjustment of
 130

proximate slabs; transversely extending rigid anchors rigidly connected with and forming rigid connections between oppositely disposed slabs said anchors being
5 formed in separable sections adjustably connected, metallic members extending in the plane of the wall between both the slabs and anchors and cementitious concrete filling the spaces between oppositely disposed slabs
10 and embedding the metallic members and anchors.

4. In concrete building construction an internal metal member, concrete slabs laid edge to edge on opposite sides of the metal
15 member, rigid metal anchors rigidly connecting and detachably connected to the slabs whereby the slabs may be individually positioned to inclose the metal members and cementitious concrete filling the chamber

formed by the slabs and embedding the 20 metal member and anchors connecting the slabs.

5. In concrete building construction, an internal metal member, concrete slabs inclosing said member and having imperforate exterior faces whereby finished faces
25 are formed by the slabs themselves, rigid metal anchors rigidly connecting and detachably connected with the slabs, whereby the slabs may be individually positioned to
30 inclose the metal member, and cementitious concrete in the chamber formed by the slabs in which concrete the metal member and anchors are embedded.

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Witnesses:

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