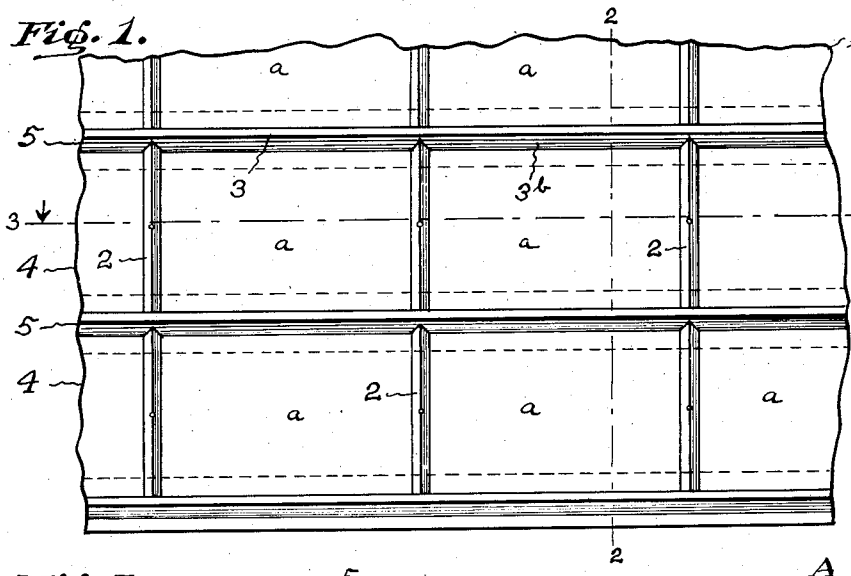
Sept. 29, 1925. 1,555,414

W. C. HALE

METHOD OF AND APPARATUS FOR CONSTRUCTING CONCRETE WALLS

Filed Oct. 29, 1923

Fig. 1.



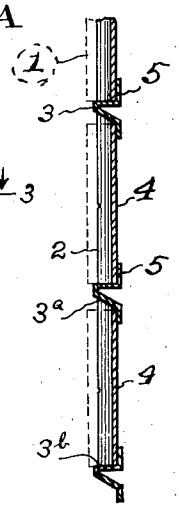
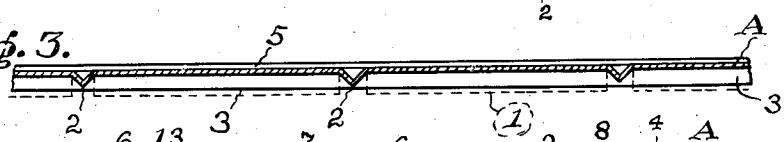


Fig. 2.

Fig. 3.



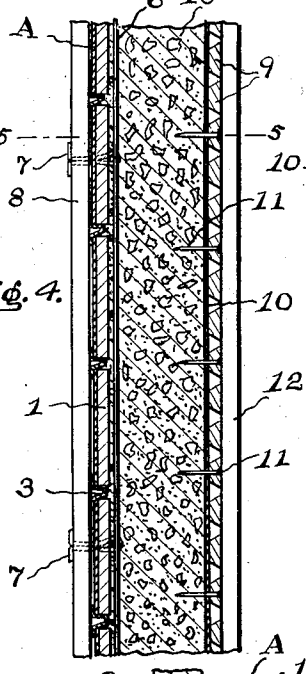


Fig. 4.

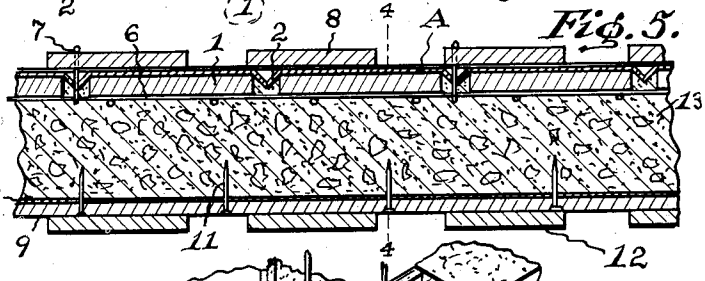


Fig. 5.

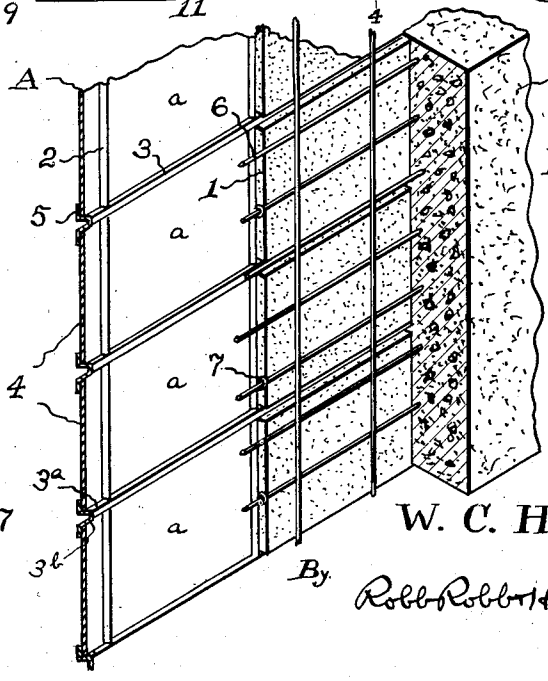


Fig. 6.

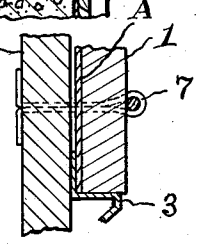


Fig. 7.

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Patented Sept. 29, 1925. 1,555,414

UNITED STATES PATENT OFFICE.

WILLIAM C. HALE, OF CLEVELAND, OHIO.

METHOD OF AND APPARATUS FOR CONSTRUCTING CONCRETE WALLS.

Application filed October 29, 1923. Serial No. 671,289.

To all whom it may concern:

Be it known that I, WILLIAM C. HALE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Methods of and Apparatus for Constructing Concrete Walls, of which the following is a specification.

The present invention relates to a method of and apparatus for constructing concrete walls, said walls being provided with a facing of a different material which forms a monolithic construction with the wall.

The usual practice of constructing such a wall is to first erect the concrete wall, using suitable forms for that purpose, and to subsequently apply the facing to the concrete wall after the concrete has set and the forms have been removed therefrom. Under such conditions it is difficult to obtain a satisfactory bond or connection between the body of the wall and the facing which is applied thereto subsequently to the hardening of the concrete. Furthermore, the additional expense of subsequently applying the facing is a considerable item and very appreciably increases the cost of the structure.

According to the present invention the wall facing, either for the outside of the wall or the inside of the wall or for both the outside and the inside is associated with the original wall mold, so that the facing or facings are formed in connection with the wall and the facings and the wall constitute a single monolithic construction. This results in producing a stronger and more durable construction of wall, and also tends to reduce the expense, since the wall together with its facing or facings is all made as a monolith in one operation and the second operation involving the subsequent application of the facing to the wall is avoided.

With the foregoing and other objects in view the invention consists in a certain method of forming the wall and also in a certain apparatus, all of which involve novel features which will be specifically pointed out in the appended claims.

For a full understanding of the invention reference is to be had to the following description and accompanying drawings, in which,—

Figure 1 is an inside elevation of a portion of the outside wall form which is provided with pockets adapted to receive and position weather resisting elements such as blocks of tile.

Figure 2 is a vertical sectional view through the same, said view being taken on the line 2—2 of Figure 1, and blocks of tile being indicated by dotted lines as positioned within the pockets.

Figure 3 is a horizontal sectional view on the line 3—3 of Figure 1, blocks of tile being indicated by dotted lines as positioned within the pockets.

Figure 4 is a vertical sectional view through a wall mold which is constructed in accordance with the invention showing the manner of associating the outer and inner facing elements with the mold so that they will form monolithic parts of the finished wall.

Figure 5 is a horizontal sectional view on the line 5—5 of Figure 4.

Figure 6 is a perspective view of a fragmentary portion of a wall and wall form, portions being broken away and shown in section to illustrate more clearly the details of construction, and

Figure 7 is an enlarged detail sectional view showing one of the tie members for holding the wire fabric in position.

Corresponding and like parts are referred to in the following description and indicated on all of the views of the drawing by like reference characters.

A fragmentary portion of the outside wall form A is shown by Figures 1, 2 and 3 of the drawing. This outside wall form may be made of any suitable material, although sheet metal of a proper gauge is well adapted for this purpose. This outside wall form is provided with a series of pockets *a* which are of a proper size and shape to receive a suitable facing material such as the blocks of tile 1. The pockets are shown as arranged in horizontal rows and adjacent pockets are separated by the vertical ribs 2 and horizontal ribs 3. The vertical ribs 2 have an angular or V-shaped formation and taper toward their outer ends, so that they hold the tile blocks 1 in a properly spaced position and at the same time permit the plastic material of which the wall is formed to enter the space between the tile blocks. The horizontal ribs 3 have upper faces 3^a which are at right angles to the front of the form and pro-

vide shoulders or ledges to support the lower edges of the tile blocks. The lower faces 3^b of the horizontal ribs are inclined downwardly, so that the superposed rows of the tile blocks are properly spaced and the plastic material from the body of the wall can enter the spaces between the tile blocks.

The outside wall form A is shown as constructed with sheet metal. A series of horizontally extending sheets 4 are transversely crimped at intervals to provide the vertical ribs 2, and the horizontal ribs 3 are formed in horizontal strips 5 which connect the adjacent edges of the sheets 4. The horizontal ribs 3 of the strips 5 project between the edges of the sheets 4, while the edge portions of the strips fit against the back of the sheets 4, being rigidly connected thereto in some suitable manner as by means of spot welding.

The pockets *a* of the outside wall form A are of a suitable size to receive the blocks 1 of facing tile and the tile blocks may be readily placed in position while the wall form is in a substantially horizontal position on the ground or floor. The tile blocks may be held in position within the pockets by placing some expanded metal or wire fabric 6 over the same. Suitable tie wires 7 may be utilized to hold the wire fabric in position, said tie wire engaging the wire fabric and passing through the outside wall form where the ends thereof are bent laterally in opposite directions, as indicated quite clearly by Figure 7. Backing or aligner members 8 are shown as placed back of the outside wall form A to support the same. Any form of support may be used, and the outside wall form A may either be associated with a conventional form of standardized concrete wall molds, or used independently thereof and suitably braced or backed with any boards or aligner members which are available. After the tile blocks have been placed in the pockets of the outside wall form A and the wire fabric fastened over the blocks to hold them in position the said outside wall form can be raised and brought into proper position for forming the wall.

An inside wall facing may also be associated with the mold so as to form a monolithic part of the wall. This inside wall facing may be of any suitable construction or material, and for illustrative purposes I have shown the inside facing as in the form of a specially prepared lathing, comprising the lathing strips 9 which are secured to a flexible sheet of material 10. Nails or like anchoring elements 11 are driven through the lathing, so that the ends thereof project into the mold and will be embedded in the plastic material or concrete when the latter is poured into position. The lathing strips 9 and flexible sheet 10 constitute the inner wall of the mold and are held in position by suitable backing or aligner members 12. The plastic concrete 13 may then be poured into the wall mold in the usual manner and it will be obvious that the outer and inner wall facings are bonded to the wall in one monolithic construction, the character of the facing tile being such that the concrete will readily adhere thereto, while the nails or anchoring elements 11 insure a proper bond between the concrete wall and the rear facing element. After the concrete has hardened the backing members 8 and 12 and the outside wall form A can be removed leaving the finished wall with the outside and inside facings forming a part thereof. The facing tiles are usually formed of weather resisting material, and also serve to impart a finished and ornamental appearance to the wall. When the inner facing is in the form of lathing, as illustrated by Figures 4 and 5 of the drawing, the plastering can be applied direct to the lathing.

The inner facing may be of various forms and materials and where the concrete wall is to be used as an outside veneer for a frame building, the side of the frame building would constitute the inner facing of the wall.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is—

1. The method of constructing concrete walls which consists in associating facing elements with the form, placing reinforcement within the form, securing the reinforcement in position against the back of the facing elements to hold the facing elements in position, and filling the form with plastic concrete so that when the form is removed the concrete and facing elements will be united in one monolithic structure.

2. The method of constructing concrete walls which consists in associating facing elements with a form when the latter is in a substantially horizontal position, raising the form and positioning it, and then placing the plastic concrete so that when the form is removed the concrete and facing elements will remain in one monolithic structure.

3. The method of constructing concrete walls which consists in associating facing elements with the form while in a horizontal position, placing reinforcement within the form and utilizing the latter to hold the facing elements within position, raising the form to an upright position, and filling the form with plastic concrete so that when the forms are removed the concrete and facing elements will be united in one monolithic structure.

4. A concrete wall form provided upon its inner facing with horizontal ribs providing

ledges to support wall facing elements, said ribs having inclined lower faces and upper faces which are at substantially right angles to the face of the form.

5. In a device of the character described, the combination with a wall form provided upon its inner face with ledges adapted to receive and support facing elements, a sheet of reinforcing fabric, and means for holding the said reinforcing fabric against the facing elements to retain the latter in position on the ledges while the concrete is being placed within the mold.

6. A concrete wall form provided upon its inner face with ribs which cooperate with each other to support and position wall facing elements, and means for holding the facing elements in position on the ribs while the concrete is being placed in the form.

7. A concrete wall form provided upon its inner face with intersecting ribs which cooperate with each other to provide pockets adapted to receive and position wall facing elements, and means for holding the facing elements in position within the pockets while the concrete is being placed in the form.

8. A concrete wall form provided upon its inner face with intersecting vertical and horizontal ribs which cooperate with each other to provide pockets adapted to receive wall facing elements, the vertical ribs being substantially V-shaped in cross section and the horizontal ribs having inclined lower faces and square upper faces which provide supporting ledges for the facing elements.

9. In a device of the character described the combination of a wall form provided with pockets adapted to receive facing elements, concrete reinforcing material, and means for holding the said reinforcing material against the facing elements to retain the latter within the pockets while the concrete is being placed within the mold.

10. In a device of the character described, the combination with a wall form provided upon its inner face with intersecting ribs which form pockets adapted to receive wall facing elements, concrete reinforcement, and tie means for holding the reinforcement against the facing elements whereby the facing elements are retained in position within the pockets while the concrete is being placed in the mold.

11. A wall form of the character described including a series of parallel sheets of material provided at intervals with transversely extending ribs, intermediate strips connecting adjacent edges of the said sheets and formed with longitudinal ribs which project between the edges of the sheets, the ribs of the sheets and strips cooperating with each other to provide pockets adapted to receive and position wall facing elements.

In testimony whereof I affix my signature.

WILLIAM C. HALE.