W. C. EDWARDS, JR.

WALL CONSTRUCTION APPARATUS.

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1,153,205. Patented Sept. 14, 1915.

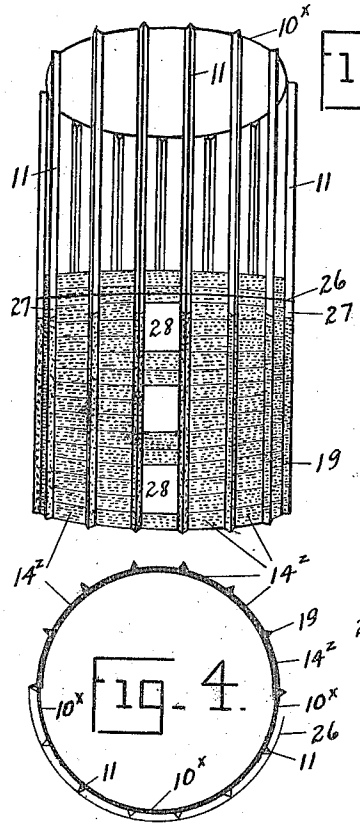


Fig. 3.

Fig. 4.

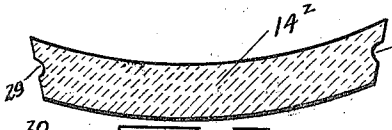


Fig. 7.

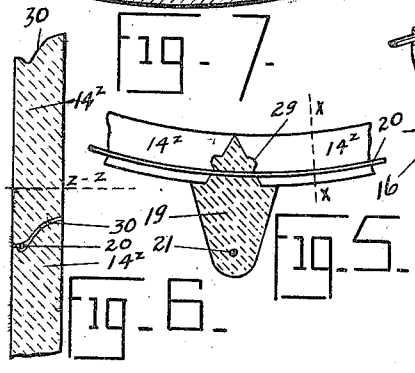


Fig. 5.

Fig. 6.

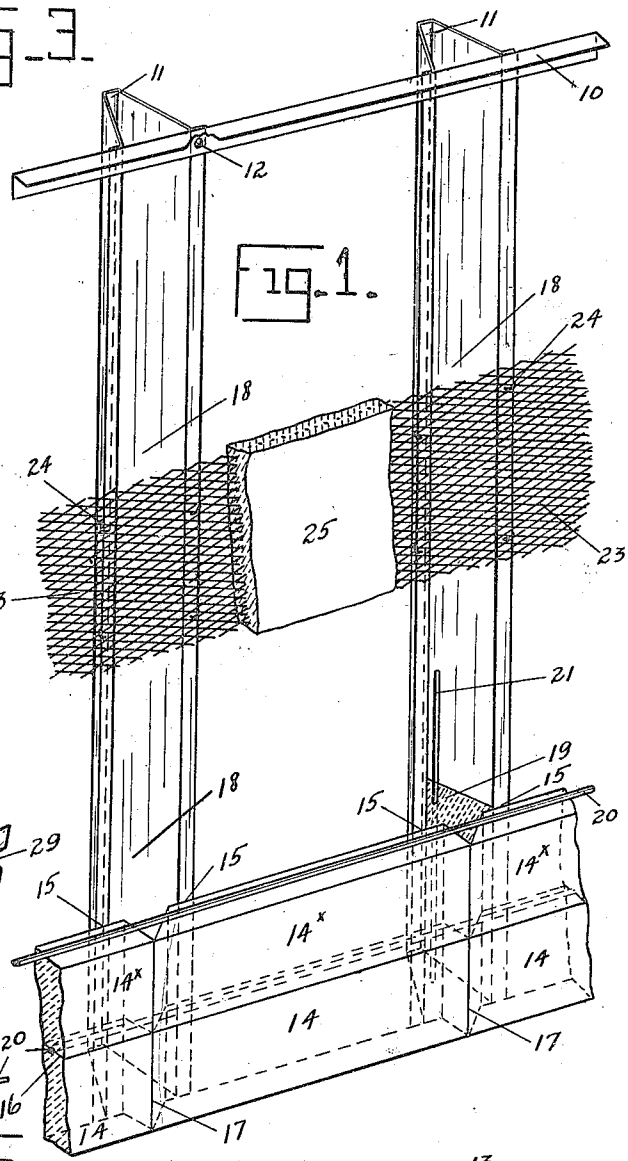


Fig. 1.

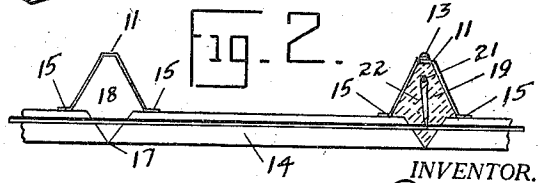


Fig. 2.

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WALL-CONSTRUCTION APPARATUS.

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To all whom it may concern:

Be it known that I, WILLIAM C. EDWARDS, Jr., a resident of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Wall-Construction Apparatus, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification.

The invention relates particularly to a method for building reinforced concrete silos, storage tanks, chimneys, bins, walls, etc.

In this construction, concrete columns are poured at intervals, said columns tying into a wall structure which may comprise precast concrete blocks, hollow tile, brick, stone or other like material or a metal lath plastered siding. The constructing apparatus is composed of a permanent wall member and a temporary framework comprising a superposed track or plate to which are attached depending channel-like studs, preferably formed of sheet metal. This plate is curved or formed to the desired outline of the structure, the channel studs standing like legs or studs against which the permanent wall member or backing is built. These channels being properly plumbed enable the wall structure to be built up vertically, the spaces between the wall member and the bases of the channel studs are filled with slush concrete forming concrete columns, which unite with the permanent wall member to form the finished wall structure. Vertical and horizontal reinforcement may be embedded as desired during construction.

In the drawings, Figure 1. is an isometric drawing disclosing a section of the wall building mechanism as used in construction. Fig. 2. shows a horizontal section taken through a block wall and mechanism like that seen in the lower portion of Fig. 1. Fig. 3 shows a silo under construction. Fig. 4 represents a plan of such silo, one half showing the completed wall, the other half being a plan of the temporary wall building framework. Fig. 5. is a fragmentary horizontal section taken through a concrete silo wall along a mortar joint. Fig. 6. is a vertical section taken along line X—X in Fig. 5. Fig. 7 is a horizontal section of a single block taken along the line Z—Z in Fig. 6.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, in Fig. 1 is shown a guiding plate 10 such as an angle iron. This track 10 is straight or curved and conforms to the outline of the structure to be built. On small structures a square or rectangular plate like 10 bolted together at the corners is stiff enough to retain its shape during construction. Otherwise bracing or guying may be resorted to.

Attached to and supporting this plate 10 are seen depending channel like studs, formed preferably of sheet metal. Any fastening means may be employed. 12 represents a bolt or pin showing one method of attachment. In Fig. 2 at 13 is shown a loop 13, fastened to the base of a channel stud 11, through this loop a pin may be driven into the foundation or base to hold the channel stud to its place during construction, or the stud may be otherwise braced or secured. This plate and attached channel studs constitute a temporary framework ready for wall construction.

The channel studs 11 being set and plumbed and the guiding plate 10 alined, the permanent wall member is erected. Blocks 14 of tile, cement stone or other building material comprising this wall member are laid on the foundation, being in contact vertically with the edges 15, 15 of the channel studs 11, which act as straight edges and supports for alining superposed courses of blocks as 14^x, preferably beveled and approximately in contact at 17. These blocks 14 and 14^x close the channel studs 11 thus forming a space or column mold 18 between the base of the channel and the permanent wall member, into which space 18 slush concrete 19 is deposited which forms a concrete column. A rod 20 laid horizontally between courses of blocks will reinforce the columns and blocks horizontally. Rods 21 placed vertically in the space 18 during pouring of columns 19 provide vertical reinforcement. Rods 20 and 21 may be tied together by wire or stirrups as at 22, Fig. 2. It will be understood therefore that I depend upon the guiding plate 10 to hold the channel studs 11 to proper alinement at the top and that the bases of the channel studs 11 are braced or otherwise secured as at 13; also that the column mold 18 comprises the temporary channel stud 11 and a permanent wall member or backing such as 14, 14^x.

The column mold 18 may be formed by the channel stud 11 and a permanent wall member such as metal lath 23 held to the

studs 11 by such means as removable wire clips 24. Plaster is applied to the inner surface of the lath as at 25 and the space 18 filled with concrete. When the plastered siding 25 and columns 19 are sufficiently cured, the plate or track 10 and studs 11 are removed and the lath is plastered on the outside between columns. This guiding plate 10 may be employed in wall construction as a track for a roller dolly from which to swing a scaffold, thus saving extra scaffolding necessary for the mason in order to point up exterior joints; or, for the plasterer to finish exterior surfaces. The mechanic can move such swinging scaffold to any desired position by such obvious arrangement.

Figs. 3 and 4 show circular wall construction. The plate 10^x is curved and the channels 11 are properly spaced and attached around same. To construct a silo for instance I would excavate below frost and lay a concrete footing. Pressing the plate or ring 10^x on the wet concrete footing would give a circle around which the first course of blocks 14^z could be laid as seen in Figs. 3 and 4. Inside scaffolding is provided and the channel studs 11 are set in position, supporting the ring 10^x directly over its impression just made in the concrete footing. A ring, hoop or cable 26 surrounds and draws in the bases of the channel studs 11 tight against the blocks 14^z to form vertical column molds as previously described with reference to Figs. 1 and 2, the method of construction being similar. Fig. 3 shows the silo wall and columns built up to a considerable height and the ring 10^x and channel studs 11 slipped up and clamped in by the hoop 26 ready for further construction; the studs 11 lapping the formed columns 19 as seen at 27. This construction therefore carries the same circle from bottom to top and the straight edge channel studs enable the blocks to be laid rapidly, true to circle and to a considerable height without fear of collapse due to green mortar joints. This construction seals all vertical joints between the blocks as the blocks extend from column to column. Door openings 28 in the silo wall are provided by omitting one or more blocks. 29 in Figs. 5 and 7 shows a vertical groove in the end of the block which is of advantage in enabling the poured column 19 to get a better bond with the blocks. 30 Fig. 6 shows a good horizontal joint between blocks and the horizontal reinforcing rod 20 is there embedded.

A wall built up by this method and apparatus will be very strong, being monolithic in character and well reinforced; also, a considerable saving in labor and materials is effected. The formed columns can be of any desired size and cross-section since the channel studs may be of any desired shape.

Such other modifications may be employed as are within the scope of the appended claims.

Having fully described my invention what I now desire to secure by Letters Patent is:

1. A wall building apparatus comprising a superposed plate and depending channel like studs attached to said plate at intervals, said studs being adapted to stand in vertical contact with a permanent wall member and forming therewith molds for concrete columns integral with said permanent wall member.

2. A wall building apparatus comprising a superposed plate and depending channel shaped studs attached to said plate at intervals, said studs being adapted to stand in vertical contact with a reinforced concrete wall member and forming therewith molds for concrete columns integral with said wall member.

3. A wall building apparatus comprising a superposed plate and depending channel like studs attached thereto at intervals; said studs being adapted to stand in vertical contact with a permanent wall member having steel reinforcement embedded therein, and forming therewith molds for reinforced concrete columns integral with said permanent wall member.

4. A wall building apparatus comprising a superposed plate and depending channel shaped studs attached to said plate at intervals, said studs being adapted to stand in vertical contact with a permanent wall member, composed of one or more courses of building blocks, and forming therewith molds for concrete columns integral with said wall member.

5. A wall building apparatus comprising a superposed plate and depending channel like studs attached to said plate at intervals; said studs being adapted to stand in vertical contact with a permanent wall member composed of one or more courses of building blocks, each block extending from stud to stud, said studs and said wall member forming molds for concrete columns integral with said blocks at their ends.

6. A wall building apparatus comprising a superposed plate and depending channel like studs attached to said plate at intervals, said studs being adapted to stand in vertical contact with a permanent wall member composed of one or more courses of building blocks, said blocks having beveled ends in vertical contact with each other at said studs, said studs and said wall member forming molds for concrete columns integral with said blocks at their ends.

7. A circular wall building apparatus comprising a superposed ring and depending channel like studs attached to said ring at intervals, and a hoop surrounding said studs; said studs being adapted to stand in

vertical contact with a permanent wall member and forming therewith molds for concrete columns integral with said wall.

8. A circular wall building apparatus comprising a superposed ring and depending channel shaped studs attached to said ring at intervals, a hoop surrounding said studs; said studs being adapted to stand in vertical contact with a permanent wall member, composed of one or more courses of building blocks, and forming therewith molds for concrete columns integral with said wall.

9. A circular wall building apparatus comprising a superposed ring and depending channel like studs attached to said ring at intervals, a hoop surrounding said studs; said studs being adapted to stand in vertical contact with a reinforced concrete wall member and forming therewith molds for concrete columns integral with said wall member.

10. A circular wall building apparatus comprising a superposed ring and depending channel like studs attached to said ring at intervals, a hoop surrounding said studs, said studs being adapted to stand in vertical contact with a permanent wall member composed of one or more courses of building blocks, each block extending from stud to stud, said studs and said wall member forming molds for concrete columns integral with said blocks at their ends.

11. A circular wall building apparatus comprising a superposed ring and depending channel shaped studs attached to said ring at intervals, a hoop surrounding said studs; said studs being adapted to stand in vertical contact with a permanent wall member having steel reinforcement embedded therein and forming therewith molds for reinforced concrete columns integral with said permanent wall member.

12. A circular wall building apparatus comprising a superposed ring and depending channel like studs attached to said ring at intervals and a hoop surrounding said studs; said studs being adapted to stand in vertical contact with a permanent wall member composed of one or more courses of building blocks, each block extending from stud to stud and having beveled ends in vertical contact with adjacent blocks, said studs and wall member forming molds for concrete columns integral with said blocks at their ends.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."