

1,045,519.

2 SHEETS—SHEET 1.



10 8
Witnesses:

Harry H. Peiss. 1
George G. Anderson. 2

Inventor:

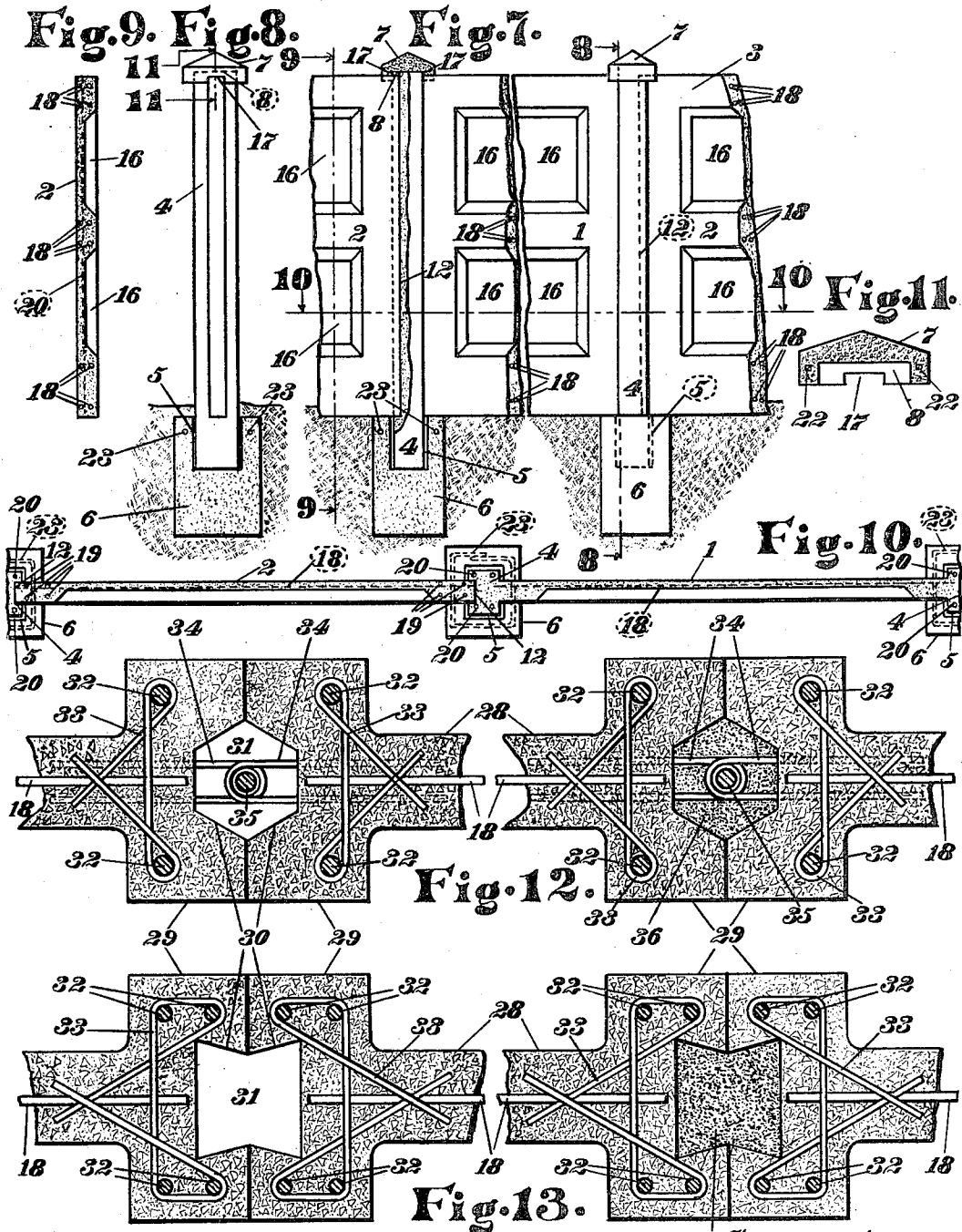
John E. Conzelman,
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J. E. CONZELMAN.
FENCE AND WALL CONSTRUCTION.
APPLICATION FILED APR. 27, 1911.

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Patented Nov. 26, 1912.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN E. CONZELMAN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNIT CONSTRUCTION COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF DELAWARE.

FENCE AND WALL CONSTRUCTION.

1,045,519.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed April 27, 1911. Serial No. 623,752.

To all whom it may concern:

Be it known that I, JOHN E. CONZELMAN, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Fence and Wall Constructions, of which the following is a specification.

This invention relates to concrete construction, and has for its object to provide a novel, and improved concrete fence, wall, or the like, in which the parts are constructed and assembled to obtain maximum strength, rigidity, and durability, and further to provide novel and improved reinforcing means for the posts which will strengthen and stiffen same throughout.

My Patent No. 992,733, dated May 16, 1911, is directed more especially to ceiling and floor construction in which concrete slabs and beams are employed, while the present invention relates to fence, wall and similar structures in which concrete slabs and posts are used.

In the accompanying drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation of a concrete fence embodying this invention; Fig. 2 is a similar view on an enlarged scale and partly in section; Fig. 3 is a sectional view, on an enlarged scale, on the line 3—3, Fig. 2; Fig. 4 is a sectional view on the line 4—4, Fig. 2; Fig. 5 is a sectional view, on an enlarged scale, on the line 5—5, Fig. 2; Fig. 6 is a sectional view of an alternate form of connection; Fig. 7 is a side elevation of a fence or wall; Fig. 8 is a sectional view on the line 8—8, Fig. 7; Fig. 9 is a sectional view on the line 9—9, Fig. 7; Fig. 10 is a sectional view on the line 10—10, Fig. 7; Fig. 11 is a sectional view, on an enlarged scale, on the line 11—11, Fig. 8; and Figs. 12 and 13, are horizontal sectional views, showing alternate forms of connections for the units.

The slabs or units 1 and 2 are formed with any desired configurations and are arranged and joined in the manner hereinafter described to form a fence or wall 3 or similar structure, the ends of each slab 1 having posts or uprights 4 formed integrally therewith. Each post 4 is preferably longer than the height of its slab 1, and the base of said post extends lower than the bottom of said slab in

order to seat in a depression 5 in a suitable footing 6, which is preferably located below the surface of the ground. A space that is left around the lower part of the post 4 within the depression 5 is filled with grout or similar cement mixture of wet concrete, which sets therein and unites the base of said post with the footing 6, thereby anchoring said post firmly in said depression. The upper end of post 4 preferably extends higher than the top of the slab 1, and is covered by a cap 7, which contains a depression 8 in the lower side thereof, in order to allow the top of said post to fit therein, said cap being secured to the top of said post by means of a dowel-pin 9, or the like. The upper end of the dowel-pin 9 seats in a depression 10 in the lower side of cap 7, and said depression 10 is filled with grout or similar cement mixture, which sets therein and holds said dowel-pin in place. A depression 11 in the top of post 4 is filled with grout and, while the grout is "green" or plastic in said depression, the cap 7 is placed in position on said post, so that the lower end of the dowel-pin 9 finds its place in the "green" or plastic grout in depression 11. The grout in depression 11 sets closely around the lower part of the dowel-pin 9 and, also, sets integrally with the sides of said depression and part of the lower part of cap 7, thereby holding said cap firmly in place on post 4.

The slabs 1 are spaced apart and the slabs 2 are located therebetween, so that each two adjacent slabs 1 are connected by a slab 2. The ends of slab 2 fit in grooves 12 in the sides of posts 4 of two adjacent slabs 1, each groove 12 being preferably arranged to extend longitudinally of its post 4, and, also, from the top of said post to substantially the level of the bottom of the slab 1, which bears said post, so that, when an end of slab 2 is inserted in place in groove 12 in said post, the bottom of said slab 2 registers in the same plane with the bottom of said slab 1. The footings 6 are preferably located at such depth below the surface of the ground that, when the slabs 1 and 2 are erected in position, the bottoms of said slabs extend below the level of the ground. The fence or wall 3 is greatly strengthened by this arrangement, for the reason that same is capable of resisting a greater amount of lateral pressure from the wind or other source than is possible when the bottoms of

the slabs 1 and 2 are in the same level with the surface of the ground or above the level of the surface of the ground. The bottoms of the slabs 1 and 2 may be disposed in a higher elevation than the tops of the footings 6, as depicted in Figs. 1 and 2, or, if desired, the bottoms of said slabs may rest on the tops of said footings, as depicted in Fig. 7.

For the purpose of illustration the slabs 1 and 2 depicted in Figs. 1 and 2 are provided with balusters 13, copings 14 and ledges 15, said balusters, copings, and ledges being preferably formed integrally with said slabs, and the slabs 1 and 2 depicted in Fig. 7 are provided with panels 16, but, it should be understood that said balusters, copings, ledges, and panels can be omitted entirely and said slabs can be formed with a uniform thickness throughout, if so desired. The coping 14 and the ledge 15 borne by slab 1 extend from the post 4 at one end of said slab to the post 4 at the other end of said slab, said coping being above the balusters 13 and said ledge being below said balusters. The coping 14 and ledge 15 borne by slab 2 terminate a short distance from both ends of said slab, so that, when the ends of said slab are inserted in place in grooves 12 in posts 4 of two adjacent slabs 1, the ends of the coping 14 and ledge 15 on said slab 2 abut said posts. The balusters 13, copings 14, and ledges 15 are omitted entirely from the slabs 1 and 2 depicted in Fig. 7. The depressions 10 and 11 are omitted entirely from the cap 7 and post 4, respectively, and the dowel-pin 9 is, also, omitted. The depression 8 in cap 7 is made relatively deep, and the part of said cap that forms the walls of said depression contains a notch or notches 17, so that, when the cap 7 is set in place on the top of a post 4, the top of said post completely fills the depression 8 and each notch 17 fits over part of the top of a slab 1 or a slab 2 adjoining said post. If desired, before the cap 7 is placed in position on post 4, either the depression 8 and each notch 17 or the tops of post 4 and the slabs 1 and 2 adjoining said post may be given a wash of a cement mixture, or the depression 8 and each notch 17 and the tops of post 4 and the slabs 1 and 2 adjoining said post may be given a wash of cement mixture, so that, when the cap 7 is placed in position on said post, the cement mixture sets integrally with cap 7, post 4 and the slabs 1 and 2 adjoining said post and thereby holds said cap firmly in place on said post.

Reinforcing bars 18 are embedded in slabs 1 and 2 and are arranged to extend longitudinally thereof. When each slab is provided with a coping 14 and a ledge 15, a bar or bars 18 may be embedded in said coping and a bar or bars 18 may be embedded in said ledge. When each slab is

provided with panels 16, the bars 18 are preferably located in the parts of said slab that extend longitudinally over and under each panel, and bars 19 are embedded in the parts of the slab 2 that extend vertically at the ends of each panel. Reinforcing bars 20 are embedded in the posts 4 and are arranged to extend longitudinally thereof, preferably adjacent the corners, being encircled at intervals by bars 21. A bar 22 is embedded in the part of cap 7 that forms the walls of depression 8 and is bent so as to extend entirely around said depression 8. Each footing 6 may be all concrete or, if desired, a bar or bars 23 may be embedded therein, said bar or bars 23 being preferably located in the part of said footing that forms the walls of depression 5 and being bent, so as to extend entirely around said depression.

Each groove 12 may be relatively shallow so that the end of a slab 2 fills same entirely, as depicted in Figs. 3 and 10, or said groove may be relatively deep, so that, when the end of a slab 2 is inserted in place in said groove, the end of said slab partly fills said groove and leaves a space 24 in same, as depicted in Fig. 6. U-shaped reinforcing bars 25 having their ends embedded in slab 1 project into the space 24 and overlap U-shaped bars 26 that project into said space from slab 2, the ends of said bars 26 being embedded in said slab 2. The bars 25 overlap the bars 26 sufficiently to allow a bar 27 that is inserted through the bars 25 to pass, also, through the bars 26, thereby locking the end of slab 2 firmly in groove 12. The space 24 is filled with grout, or a similar cement mixture, or wet concrete, and when same becomes set in said space, the post 4 and slab 2 are united thereby, thus constituting a monolithic structure. The cap 7 is then set in place on said post in manner hereinabove described. By reason of the groove 12 being relatively deep, the slabs 2 can be adjusted longitudinally.

In the construction illustrated in Figs. 12 and 13, the fence or wall is formed of a plurality of slabs 28. Each slab 28 is provided with posts 29 that are formed integrally with the ends thereof. The posts 29 of slab 28 abut the posts 29 of each slab 28 adjacent thereto. In this construction, each post 29 is approximately half as wide as an ordinary post so that, when same abuts a post 29 of the next slab 28, the two abutting posts 29 unite to form a post as large as an ordinary post, *i. e.*, post 4. Each post 29 is provided with a groove 30, which extends longitudinally in the face that abuts the post 29 of the next slab 28. The grooves 30 in two abutting posts 29 register with each other and unite to form a space 31 between said posts. While each groove 30 depicted in Fig. 12 is formed with a semi-hexagonal

cross-sectional configuration, it should be understood that same can be formed with any other semi-polygonal cross-sectional configuration, or, if desired, can be formed with an arcuated cross-sectional configuration. Reinforcing bars 32 are embedded in post 29 and are arranged to extend longitudinally thereof, being preferably located near the corners of same and being encircled at intervals by bars 33. U-shaped bars 34 having their ends embedded in slab 28 project into the space 31 and overlap similar U-shaped bars 34 that project into said space from the next slab 28. A bar 35 extends vertically through the space 31 and passes through all of the U-shaped bars 34 that project into said space, thereby locking the two abutting slabs 28 together and preventing longitudinal movement of either slab 28. The space 31 is then filled with grout or wet concrete which sets integrally with the sides and bottom of each groove 30, thereby forming a concrete key 36 that prevents lateral movement of either slab 28. In Fig. 13, each groove 30 is formed with a dovetail-shaped cross-sectional configuration, and, by this arrangement, when the space 31 formed by two of such dovetail-shaped grooves 30 is filled with grout or wet concrete, said grout or concrete sets integrally with the sides and bottom of each of said grooves and forms a concrete key 37, which not only locks the two abutting posts 29 firmly together, but prevents longitudinal and lateral movements of either slab 28. By reason of each groove 30 being formed with a dovetail-shaped configuration, the part of the key 37 that fills said groove has a similar shape and thereby locks its posts 29 firmly to the post 29 abutting same, so that the necessity of using the U-shaped bars 34 and bar 35 is obviated, and, for this reason, same are omitted. Some of the bars 32 that are embedded in post 29 are located near the corners and the others are located

in the parts of said post that form the walls of groove 30, and all of said bars 32 are encircled at intervals by bars 33.

I claim:

1. A concrete structure including a series of spaced one-piece slabs each having a vertical post formed integral with each end thereof, each post of each slab being formed with a vertical groove on its outer face that extends from the bottom portion of the post through the top thereof, and a second series of one-piece slabs each having a longitudinal coping at its top and a longitudinal ledge adjacent its bottom, said copings and ledges terminating in spaced relation to the ends of the slabs that bear same, said second series of slabs having their ends extending in the grooves of adjacent posts and having the ends of their copings and ledges abutting the faces of said posts that have said grooves.

2. A concrete structure including a slab having a post at one end thereof, the outer face of said post opposite to the slab being formed with a vertical groove, a vertical reinforcing bar at each corner of the post, the bars adjacent said groove of the post being disposed on opposite sides of the groove, a series of transverse reinforcing bars that encircle all of said vertical bars and have their end portions turned inwardly to be disposed in the space defined by the vertical bars and extending adjacent the inner corners formed by the groove, said end portions of the transverse bars being inclined and crossing one another at about the center of the post and having their extremities located opposite the adjacent end of said slab.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

JOHN E. CONZELMAN.

Witnesses:

GEORGE G. ANDERSON,
GLADYS WALTON.