

J. E. CONZELMAN.
 CONCRETE CONSTRUCTION.
 APPLICATION FILED JUNE 5, 1911.

1,031,048.

Patented July 2, 1912
 2 SHEETS—SHEET 1.

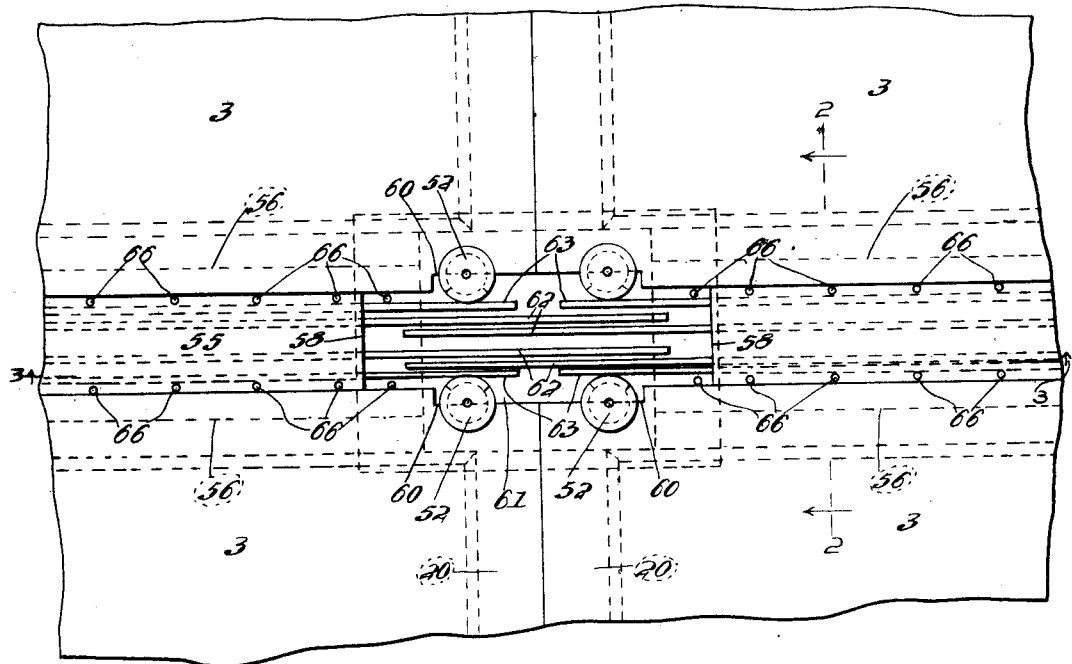


Fig. 1.

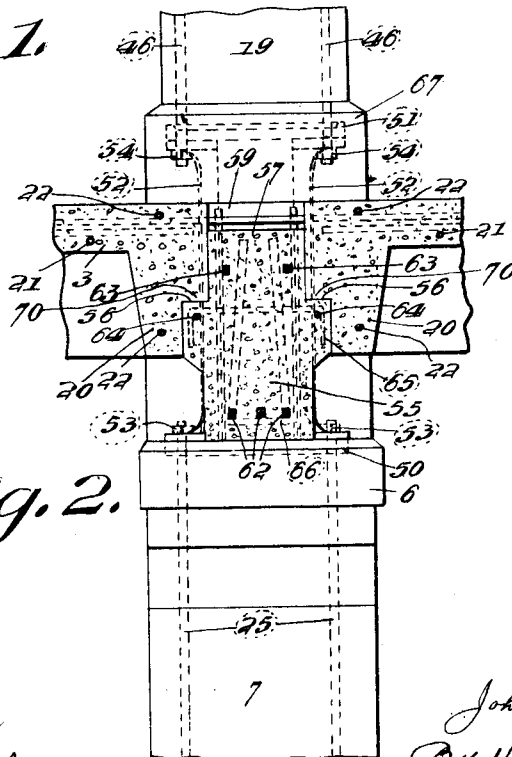


Fig. 2.

Witnesses:
 Lottie M. Fox
 Berthavon Behrens.

Inventor:
 John E. Conzelman,
 By Hugh N. Wagner,
 His Attorney.

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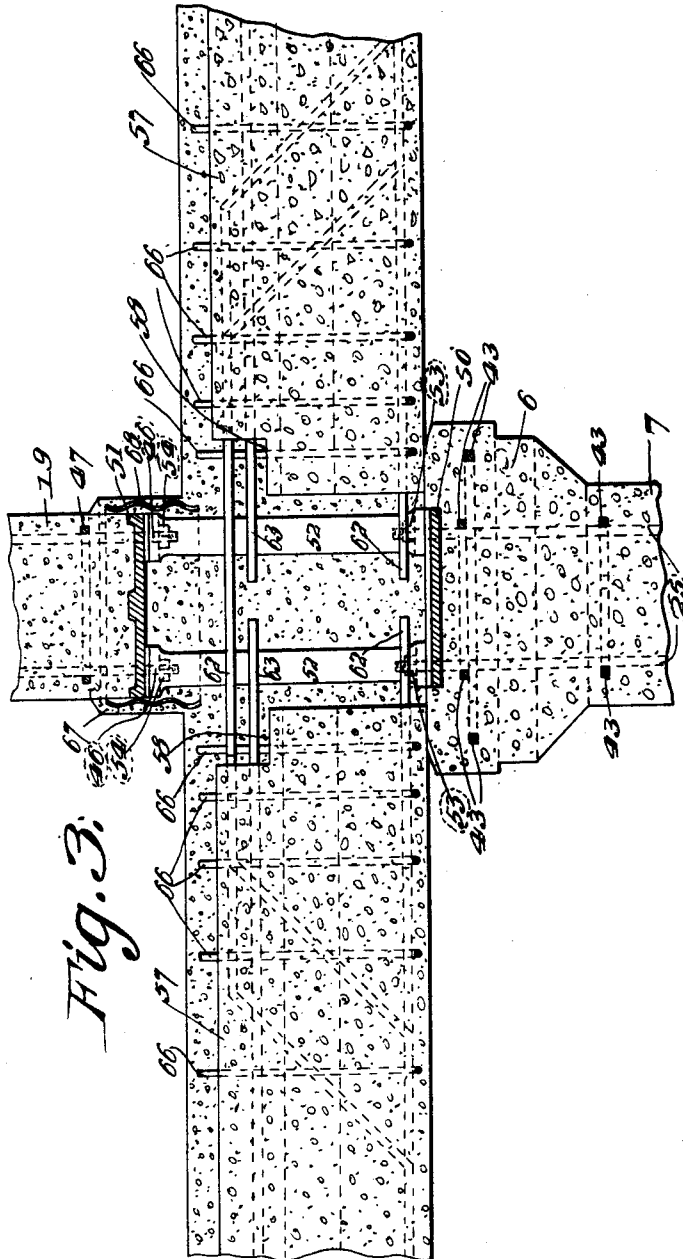


Fig. 3.



Fig. 4.

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.

CONCRETE CONSTRUCTION.

1,031,048.

Specification of Letters Patent.

Patented July 2, 1912.

Original application filed April 14, 1910, Serial No. 555,354. Divided and this application filed June 5, 1911. Serial No. 631,281.

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 Concrete Construction, (Divisional Case R.) of which the following is a specification.

This application is a division and continuation of one filed by me April 14, 1910, Serial No. 555,354.

This invention relates to certain new and useful improvements in concrete construction in which concrete beams are used to support concrete slabs and are themselves supported by means of columns or uprights.

The object of the invention is to provide improved and effective means for uniting a superposed column to a supporting column, and at the same time to connect the beams and slabs supported by the latter to both columns so that the completed structure will be as an integral mass.

In the drawings: Figure 1 is a top plan view of the invention, the superposed column being omitted. Fig. 2 is a section taken on the line 2-2 of Fig. 1, the superposed column being shown in position. Fig. 3 is a section taken on the line 3-3 of Fig. 1, and Fig. 4 is a perspective view on an enlarged scale of one of the connecting members.

In accordance with the present invention, a lower concrete column 7 is provided with a cap 6, molded integral therewith, a plate 50 being set in the top face of cap 6. The upper column designated 19 has a similar plate 51 set in its bottom end, the columns being arranged in spaced relation, the upper column 19 being supported by means of the connecting members or posts 52. Vertical bars 25 are embedded in column 7, and extend through perforations in plate 50 and, also, through perforations in the lower ends of the posts 52. The bars 25 are threaded at their free ends, and receive nuts 53, which act to not only secure plate 50 to column 7 but, also, bind the posts 52 firmly to said plate. The upper ends of members 52 are

similarly secured to plate 51 by means of nuts 54 on the threaded lower ends of bars 46, the bars being embedded in column 19 and have their threaded ends extending through perforations in plate 51 and also, through perforations in the upper ends of posts 52.

The ends of each beam 55 rest upon cap 6 of lower column 7, and are oppositely disposed in pairs, so that the posts 52 are located between the beam ends, the beams being preferably of the same shape in cross-sectional configuration as the beams disclosed in my co-pending application filed Nov. 16, 1909, Serial No. 528,298.

Each side of each of the beams 55 is provided with a shoulder 56, and a tenon 57 located between the shoulders, a portion of the end of each tenon adjacent the columns being cut-away as indicated at 58. A flange 20 is provided at the sides and ends of slabs 3, the flanges being cutaway as indicated at 70 to form spaces in which the shoulders 56 of beams 55 are received, the top surfaces of the slabs being located above the tenons 57, as clearly depicted in Fig. 2. A space 59 is thus formed between the two slabs 3 supported by a beam. The corners of each slab 3 are located above cap 6 and are provided with cut-away portions 60, which unite to form space 61 through which members 52 extend, said space being located over cap 6 and partly with open sides, which must be temporarily closed with boards or formers.

Reinforcing bars 62 are embedded in the lower part of beam 55, and preferably project from the ends of same into space 61, in order to lap or abut similar bars 62 that project from an oppositely-disposed beam 55, some of said bars 62 being bent upwardly to project from the ends of tenon 57. Other reinforcing bars 63, which are embedded in tenon 57, project from same into space 61 and have their ends located opposite similar bars 63 that project from a tenon 57 of an oppositely-disposed beam 55. Bars 64 are embedded in shoulders 56 and are connected at intervals by the inverted U-shaped bars 65. U-shaped bars 66 are embedded at in-

tervals in beam 55 so that their lower parts underlie bars 62. A so-called form (not shown in the drawings) is placed around the base of column 19, and said form and spaces 59 and 61 are filled with grout or plastic concrete. The grout or plastic concrete sets in said form and spaces 59 and 61, being supported while plastic in said spaces by means of tenon 57 and cap 6 and the boards or formers, which close the sides of space 61, and unites slabs 3, beams 55, and columns 7 and 19 integrally together. The grout or concrete in the form encircling the base of column 19 forms a concrete ring 67 that is integral with column 19 and covers the upper end of each member 52. As additional strengthening means, a ring of expanded metal 68 or the like is embedded in ring 67 and is preferably arranged to encircle the base of column 19 and, also, to extend into the grout or concrete in space 61.

Bars 43 are embedded in column 7 and in cap 6 and are bent to surround bars 25 in column 7, one bar 43 in cap 6 being located adjacent bars 25, and the other bar 43 being arranged near the perimeter of said cap. A bar 47 at the base of column 19 encircles the bars 46 in said column.

What is claimed is:

1. A concrete structure including a supporting column, reinforcing bars projecting from its top, members resting on said column and being secured to said bars, a superposed column resting on said members, reinforcing bars projecting from said superposed column and being secured to said members, beams resting on said supporting column, slabs resting on said beams and having cut-away portions, said cut-away portions uniting to form a space around said members, and a concrete filler for said space adapted to set integrally with said columns, said beams, and the edges of said slabs surrounding said space.

2. A concrete structure including a supporting column, a plate surmounting the same, reinforcing bars projecting from said column, members resting on said plate and being secured to said bars, a superposed column, a plate underlying said superposed column and resting on said members, reinforcing bars projecting from said superposed column and being secured to said members, beams resting on said supporting column, slabs having cut-away portions and resting on said beams, said cutaway portions uniting to form a space around said members, and a concrete filler for said space adapted to set integrally with said beams, said columns, and the edges of said slabs surrounding said space.

3. A concrete structure including a sup-

porting column, a plate surmounting the same, reinforcing bars projecting from said column, members resting on said plate and being secured to said bars, a superposed column, a plate underlying said superposed column and resting on said members, reinforcing bars projecting from said superposed column and being secured to said members, beams resting on said supporting column, slabs having cut-away portions uniting to form a space around said members, a concrete filler for said space adapted to set integrally with said beams, said column, and the edges of said slabs surrounding said space, and a concrete ring formed around the base of said superposed column.

4. A concrete structure including a supporting column, a plate surmounting the same, reinforcing bars projecting from said column, members resting on said plate and being secured to said bars, a superposed column, a plate underlying said superposed column and resting on said members, reinforcing bars projecting from said superposed column and being secured to said members, beams resting on said supporting column, slabs having cut-away portions and resting on said beams, said cutaway portions uniting to form a space around said members, a concrete filler for said space adapted to set integrally with said beam, said columns, and the edges of said slabs surrounding said space, a concrete ring formed around the base of said superposed column, and a ring of expanded metal embedded in said concrete ring and arranged to encircle the base of said superposed column.

5. A concrete structure including a pair of superposed columns, a series of posts arranged between said columns to support the upper one from the lower one, beams supported from the lower column and having their ends projecting in the space between the columns in spaced relation, and concrete filling the space between the inner ends of the beams, and the space between the top of the lower column and the base of the upper column, said concrete extending up around the base of the upper column on the exterior of the latter to reinforce the latter.

6. A concrete structure including a pair of superimposed columns, a plate at the upper end of the lower column and a plate at the lower end of the upper column, a series of spaced posts having right angular perforated ends that seat on said plates to thereby support the upper column, each of said plates having perforations therein, rods having one of their ends embedded in the columns and having their opposite ends

threaded and passed through said plate perforations and through said perforations of the right angular ends of the posts, and nuts on said threaded ends of the rods to bear against said right angular ends to thereby clamp the latter to the plates and the plates to the columns.

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

JOHN E. CONZELMAN.

Witnesses:

ARCHER W. RICHARDS,
D. P. LANE.

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