

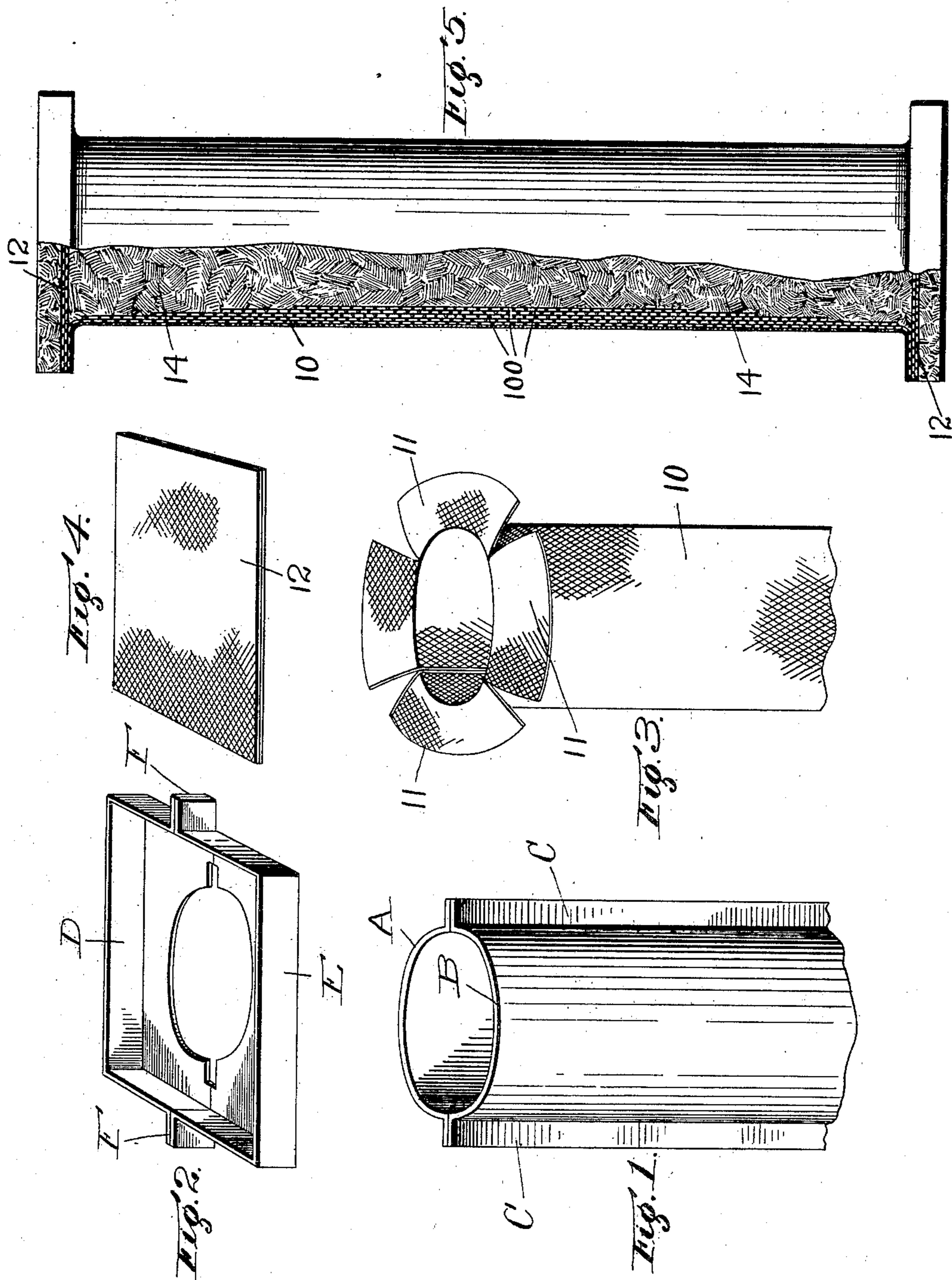
No. 701,377.

Patented June 3, 1902.

O. W. NORCROSS.
CONCRETE COLUMN.

(Application filed Nov. 22, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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CONCRETE COLUMN.

SPECIFICATION forming part of Letters Patent No. 701,377, dated June 3, 1902.

Application filed November 22, 1901. Serial No. 83,279. (No model.)

To all whom it may concern:

Be it known that I, ORLANDO W. NORCROSS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Concrete Column, of which the following is a specification.

This invention relates to a column for building constructions which has been especially designed with a view of securing the advantages, first, of providing a fireproof construction which can be more cheaply manufactured than cast or built-up columns now employed in most fireproof structures; second, to provide a form of column which will utilize the immense crushing strength of concrete to the best advantage, and, third, to provide a column for building constructions which can be molded or cast in the immediate vicinity of where the same is to be employed and which can be made by comparatively unskilled labor.

To these ends this invention consists of the concrete column and of the combinations of parts therewith, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a perspective view of the casing used for molding the body portion of a column according to my invention. Fig. 2 is a perspective view of the frame which may be employed for molding the floor-plate of a column constructed according to my invention. Fig. 3 is a perspective view of the tubular body of metallic network employed in each column. Fig. 4 is a perspective view of the network-plates employed at the ends of the column; and Fig. 5 is a side view, partially broken away, of a completed column constructed according to my invention.

In the greater number of buildings which are now erected on fireproof principles iron columns are employed. These iron columns are either cast-iron columns or else are built-up columns formed by riveting a number of metallic rolled sections together. Metal columns of either of these types are comparatively expensive and frequently have to be carried for long distances before being deliv-

ered at the places where they are to be employed.

The especial object of my present invention is, therefore, to provide a column for building constructions which may be employed in place of the ordinary iron column and which, if desired, may be manufactured in immediate location where the same is to be used. To these ends I have devised a column consisting, essentially, of a tubular body of metallic network which is inclosed in a solid cylindrical body of concrete.

In all columns or posts in addition to the direct crushing strain of the weight acting in line with the column there is always a tendency of the column to "buckle" or spring—in practice columns usually collapsing on account of the bending or buckling of the same rather than by reason of being crushed. In practice I have demonstrated that the crushing strain of concrete is amply sufficient to support the loads carried by columns of ordinary building constructions, and in order to supply the necessary tensile strength to resist the tendency to buckle or collapse I locate the tubular body of metallic network substantially at the outer surface of the column, where the buckling strains are heaviest. In some cases, moreover, I may employ a plurality of layers of metallic network, a greater number of layers being employed near the central part of the column, so that the maximum amount of metal will be located in the body portion of the column at the points of greatest strain.

A column constructed according to my invention may be provided at its ends with any desired form of floor-plate or capital, and in practice the floor-plates of my columns are preferably reinforced by layers of metallic network and by the turned-out ends of the tubular body of metallic network.

Referring to the accompanying drawings for a detail description of a column constructed according to my invention as shown in Fig. 1, the mold or casing I employ for casting the body portion of a column constructed according to my invention comprises two semicylindrical sections A and B, which may be clamped or bolted together by flanges C.

As illustrated in Fig. 2, the mold I employ for forming a floor-plate or capital on a column constructed according to my invention comprises the frames D and E, which may be
5 clamped or secured together by flanges F.

In molding or forming a column constructed according to my invention a tubular body of metallic network 10 is first placed in the cylindrical casing, the ends of the tubular
10 body 10 being preferably bent over, as at 11, while in some cases a number of shorter-length tubes 100 may be placed in position to reinforce the center of the column, as shown in Fig. 5. The concrete for forming the body
15 portion of the column is then molded in place. In molding the concrete to form the body portion 14 of the column the concrete may either be tamped in or else may be flowed in. In practice I prefer to flow the concrete into
20 place, as I have found that by flowing or washing the concrete into place in its mold I am enabled to secure a more compact construction than can be secured by tamping or hammering the concrete into place. The ends
25 of the column are then molded into place to inclose the metallic network-plates 12, and the column is allowed to dry or set in its mold until it is sufficiently hardened to retain its shape, after which it may be withdrawn from
30 the mold and allowed to season or set until the time it is required for actual use.

The molding or manufacturing of columns according to my invention may, if desired, be practiced in the locations where the columns
35 themselves are to be erected, although for ordinary purposes I prefer to have the columns stored for some time before they are actually used.

A considerable variety of materials may be
40 used for the concrete employed to form the body portion of the column, depending upon what materials can be procured to best advantage at the place of manufacture of the

columns. In practice I prefer to employ a matrix of Portland cement, and the aggregate
45 or backing may be formed of broken stone, although where a lighter construction is desired a cinder concrete may be employed or an aggregate of broken brick or other lighter material than stone may be used. 50

I am aware that numerous changes may be made in practicing my invention by those who are skilled in the art, and I do not wish, therefore, to be limited to the construction I have
55 herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. A column for building constructions, consisting of a solid body of concrete, with a number of concentric tubular bodies of metallic
60 network inclosed in the concrete, so that the maximum amount of metal will be located near the center of the column.

2. A column for building constructions, comprising a body and floor-plates of solid
65 concrete, with a number of tubular bodies of metallic network inclosed in the body portion of the column, so that a maximum amount of metal will be located near the center of the column, and metallic-network plates inclosed
70 in the floor-plates of the column.

3. A column for building constructions, comprising a cylindrical body portion and floor-plates of solid concrete, and a tubular
75 body of metallic network inclosed in the body portion of the column, and having turned-out ends inclosed in the floor-plates of the column.

In testimony whereof I have hereunto set my hand in the presence of two subscribing
80 witnesses.

ORLANDO W. NORCROSS.

Witnesses:

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