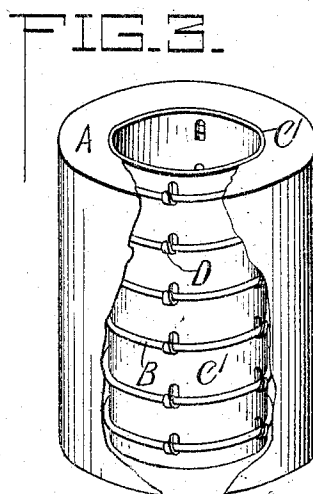
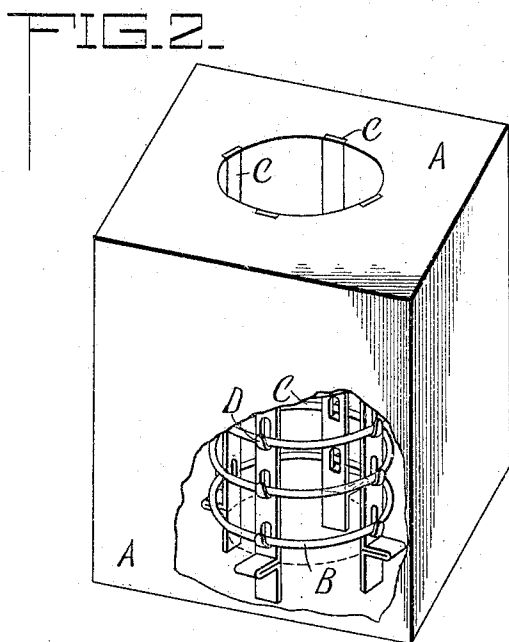
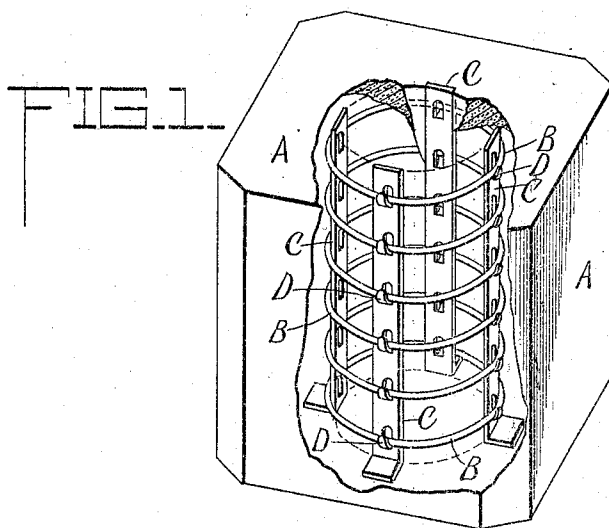


W. A. BISHOP.
BUILDING CONSTRUCTION.
APPLICATION FILED DEC. 11, 1908.

980,479.

Patented Jan. 3, 1911.

2 SHEETS—SHEET 1.



Witnesses
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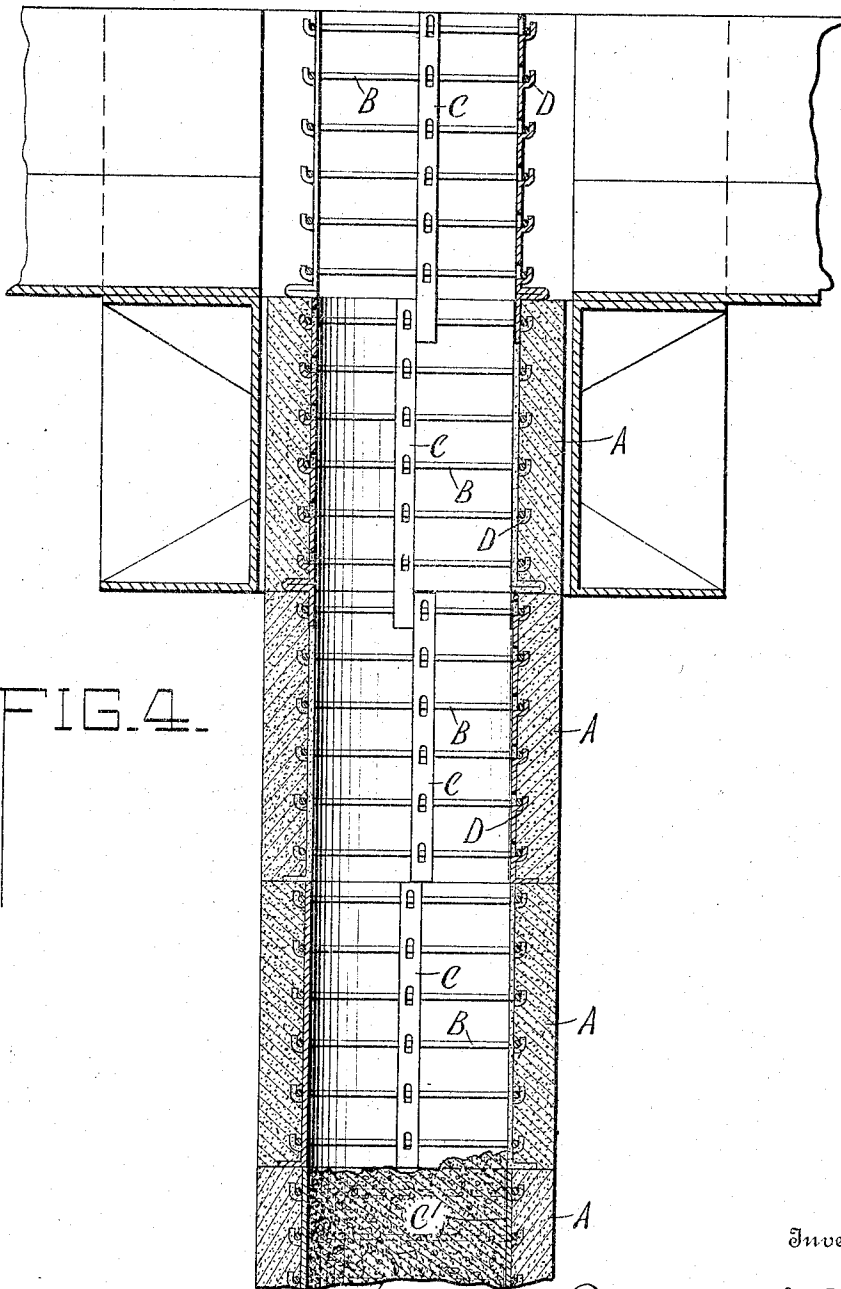


FIG. 4.

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UNITED STATES PATENT OFFICE.

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BUILDING CONSTRUCTION.

980,479.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed December 11, 1908. Serial No. 466,929.

To all whom it may concern:

Be it known that I, WILLIAM ABELL BISHOP, a citizen of the United States of America, and a resident of the city of Newark, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Building Construction, of which the following is a specification.

My improvement relates to the construction of hollow blocks, for columns used in the molding of pillars, which consists of blocks of high class fireproof concrete provided with a central opening and in which is embedded metallic reinforcing pieces, formed in the shape of rings, which blocks when placed one above the other will provide a hollow column having a clear smooth opening in which is molded, or cast, an integral concrete supporting pillar for a building, the reinforcing rings becoming exterior rings to the said supporting pillar and the blocks forming the outside finish and fireproof envelop for the pillar. By this means I am enabled to employ certain fixed or standard sizes of hollow blocks which will result in certain standard sizes of supporting pillars.

In order that my invention may be fully understood I will proceed to describe it with reference to the accompanying drawing in which:

Figure 1 is a perspective view of one of my improved column blocks showing one form of a skeleton reinforcing tube. Fig. 2 is a perspective view showing another form of column block and a skeleton reinforcing tube. Fig. 3 is a perspective view showing still another form of column block and a reinforcing tube. Fig. 4 is a vertical section of a series of column blocks placed one upon the other so as to provide a pillar mold and surmounted by a metallic reinforcing tube.

A is the shell of a hollow fireproof cement block, and B are metallic reinforcing rings suitably spaced and embedded in said block. Vertical spacing strips C, each having an out-turned foot piece, and a vertical row of outwardly projecting upturned supporting hooks struck up therefrom, are provided and serve to space the rings B properly while the hollow block is in formative state. When the rings B have been suitably placed and spaced on the hooks D of the spacing strips C, the cement is formed around the

same by a suitable mold, not shown, and the interior finish is formed flush with the interior faces of the spacing strips C, the rings B being embedded in the cement shell A. These hollow fireproof cement blocks are made beforehand and are brought to the building being constructed already formed and hardened and ready for use and it is a part of my invention to devise and employ a series of sizes relating both to the exterior dimensions of the blocks, which, as aforesaid, are merely shells or envelops, and more particularly to the interior opening which provides means for the reception of the final and integral pillar, which pillar becomes the support proper of the building or structure; the shell, or envelop, merely acting as a temporary support for the reinforcing rings, and, after the pillar is properly embedded and set therein, constitutes a fire resisting shell.

In carrying my invention into effect, the exterior shell may be of any shape so far as its outside is concerned, that is to say, it may be square, octagonal, round or in any other shape that may be desired which may tend to increase its usefulness, or operate to lend artistic finish to the whole; but it is to be understood that the pillar is the interior integrally formed piece with the metallic reinforcing rings. In Fig. 4 I show several of these hollow blocks supported one above the other so as to form a column for molding a pillar.

The column blocks are made of dense rich fire resisting concrete and the reinforcing rings are cast in them when made, the rings being suitably spaced by means of the metal spacing strips C carrying the hooks D. The rings being endless give the greatest tensile strength for the weight of metal used. I have shown them circular in form but they may be of any cross section, round, square, flat or twisted.

The blocks when erected into a column form a clear smooth open form to receive the concrete, making it easy to thoroughly ram or tamp the concrete in place and avoiding all chances of the concrete not filling the entire column solid. The blocks may be laid up with cement joints, or allowance may be made for shrinkage in the column by laying them up loosely and pointing up the joints after the entire concrete mass has set and

shrunk. They may be made absorbent or non-absorbent as desired to suit the mixture which is to be placed within them. They may be made on the job or in the factory and carried in stock for quick work. They may be made in any mixture desired and of any exterior finish within the range of concrete construction.

The column blocks are adapted to form a perfect protection for the steel reinforcement and all chance of imperfect covering is eliminated. They may be subjected to heavy pressure during process of manufacture if desired.

The difficulty of getting concrete mixtures to flow perfectly around column reinforcement when such concrete is placed in wooden forms and the difficulty of efficiently tamping the same is well known and it is of common occurrence in reinforced concrete construction that when the wooden forms are removed it is found that the concrete has not entirely covered the reinforcement nor filled the form. It is then necessary to plaster up these holes and deficiencies when finishing the columns. My reinforced concrete block columns avoid all this and present a finished surface when erected.

With the block method, the architect, engineer and owner are certain that the reinforcement is in its proper place, that it is accurately spaced and thoroughly protected, as blocks may be inspected and imperfections noted and rejected before being laid in the columns. With the wood form method this cannot be done as after the forms are removed to reject the column would mean the tearing out of the entire work.

The endless ring type of reinforcement is superior to the spiral wound type as the greatest binding strength is obtained in a given weight of metal, and the tendency of the spiral to loosen and unwind when the outer shell is burned off, crushed or otherwise removed is well known. When this occurs with the spiral wound reinforcement it is obvious that the column reinforcement is useless. With this block type the entire outer fireproofing shell may be removed by any method and the column would still be a banded concrete pillar with its bearing capacity as originally figured unimpaired; in fact in addition to the advantages of construction there is almost no chance for this type of column to fail due to exterior damage and its crushing strength is far beyond that of columns constructed in any other manner.

Where great compressive strength is required and the space limited the metal spacers holding the reinforcement rings may be made of a continuous tube C' having

struck up hooks D to carry the rings or band B as shown in Fig. 3.

The block columns may be used in conjunction with steel girders, etc., by setting the column clamps and resting the ends of the girders therein and casting the ends of girders into the column.

The columns are no larger in section than any other form of reinforced concrete construction of the same or less bearing capacity.

There is no limit to the height of floors or spacing of columns within the range of reinforced concrete constructions.

Fig. 2 shows a metallic reinforcing tube which is of skeleton form. The spacing strips in this instance have their outturned foot pieces formed with right angle extensions providing anchors which are inserted in the pillar-opening on the uppermost column block.

Having thus described my invention the following is what I claim as new therein and desire to secure by Letters Patent:

1. A hollow column block comprising a concrete shell and a reinforcing tube having rows of outwardly projecting spacing hooks and a series of rings supported on the spacing hooks; the tube being embedded in the concrete shell flush with the inner surface thereof so as to provide a clear smooth opening in the concrete shell.

2. A hollow column block comprising a concrete shell and a tube having rows of outwardly projecting spacing hooks struck up therefrom and a series of rings supported on the spacing hooks; the tube being embedded in the concrete shell flush with the inner surface thereof so as to provide a clear smooth opening in the concrete shell.

3. A hollow column block comprising a concrete shell and a tube consisting of strips, each having a row of outwardly projecting spacing hooks and a series of rings supported on the spacing hooks; the tube being embedded in the concrete shell flush with the inner surface thereof so as to provide a clear smooth opening in the concrete shell.

4. A hollow column block comprising a concrete shell and a tube consisting of strips, each having a row of outwardly projecting spacing hooks and outturned foot pieces, and a series of rings supported on the spacing hooks; the tube being embedded in the concrete shell flush with the inner surface thereof so as to provide a clear smooth opening in the concrete shell.

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