

No. 835,717.

PATENTED NOV. 13, 1906.

G. F. THORN.
MATERIAL OF BUILDING CONSTRUCTION.
APPLICATION FILED DEC. 5, 1905.

Fig. 1.

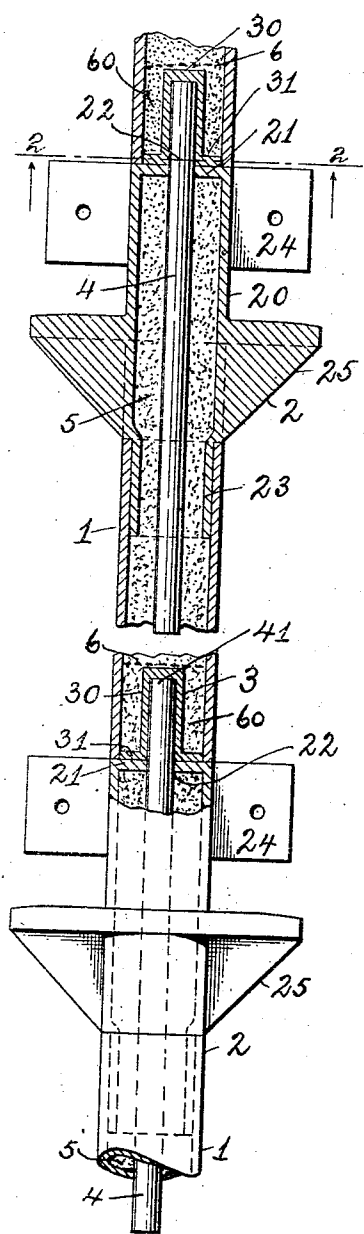


Fig. 2.

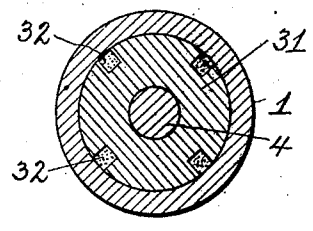
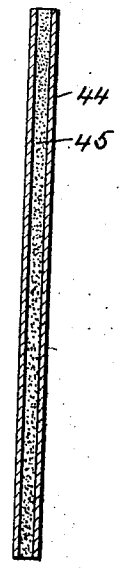


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE F. THORN, OF NEW YORK, N. Y.

MATERIAL OF BUILDING CONSTRUCTION.

No. 835,717.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed December 5, 1905. Serial No. 290,427.

To all whom it may concern:

Be it known that I, GEORGE F. THORN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Materials of Building Construction, of which the following is a specification.

This invention relates to columns adapted to be employed as materials of construction; and its novelty consists in the construction and adaptation of the parts, as will be more fully hereinafter pointed out.

The present case forms one of a series of copending applications for patents of the United States which I have filed for columns, of which the others are as follows: No. 277,213, filed September 5, 1905; No. 288,099, filed October 17, 1905, and No. 298,116, filed January 27, 1906. The inventions embodied in these several applications for patents embody certain generic features common to all, each showing a plurality of casings or columns coupled with each other by a member which is supported by one casing or column and supports the one next above it and which member is hollow and contains within it a filling of cement or other suitable material which projects into it from the casing or column.

In its relation to my earlier-filed applications, Serial Nos. 277,213 and 288,099, the present invention in common therewith has its coupling member referred to of the form of a cap, provided with an apertured plate which supports a socket member arranged in the casing or column next above the cap, and from the aperture there extends into the socket member referred to a pin, rod, or shaft, which serves as a holding element of the construction. This holding element, as shown and preferred in the present case, extends entirely through the apertured plate and into the casing or column below, in which latter it is embedded in cement. In this respect it is similar to the corresponding element of the construction shown in my application Serial No. 283,098. The constructions which are common to this and my earlier-filed cases are not generically claimed herein, for the reason that such claims are embraced in the earlier cases, the present case being based on the construction which in its relation to my aforesaid earlier applications is peculiar to the present case—that is to say, the present case is largely founded

upon the invention which I have made, comprising a coupling member or cap of substantially identical contour or diameter as the casing members which it connects, and this feature is claimed herein *per se* and with the other elements of the construction with which the cap or coupling coöperates. There are certain other features peculiar to the present case, as will appear from the following description and claims.

In ordinary building construction, as the art is practiced in the United States, cast-iron columns provided with laterally-projecting flanges or brackets to receive the beams of the building and with terminal flanges whereby the columns are bolted together in vertical series have long been employed. The disadvantages of these cast-iron columns are well recognized. Their tensile strength is low. They are affected disastrously by high temperatures. They rust rapidly. They are frequently brittle when cold and sometimes when hot. They frequently have internal flaws impossible to detect and are of uneven density and uncertain quality; but as this material is molded and has the enormous advantage of being capable of being constructed into ornamental shapes and with great rapidity of manufacture it continues to be employed in spite of its disadvantages. It is also economical to make and to assemble. Constructors have long sought some material which would possess the advantages and avoid the disadvantages of cast-iron columns.

The purpose of this invention is to provide such a material of construction, and to that end a column is made having a casing of steel tubing. It is provided at its top with a cap made of cast metal of external contour and size, substantially identical with that of the tubing, and is provided with means for accurately securing it within the tube. It is provided at its bottom with a socket member having an inwardly-projecting thimble and means for securing it firmly in place. The entire column is filled with cement and a rod of steel or other suitable material is passed through the cap into the column and is caused to project upward therefrom so that it will fit into the socket of the column next above it and downward therefrom far enough to afford a firm and rigid hold to the cement filling inside of the steel casing. The cap is provided with the usual lateral flanges or brackets with which the cast-iron columns are commonly supplied.

By this invention I secure a column which is readily made of a superior material—rolled steel. It has all of the advantages of a cast-iron column, because those parts which are required to be shaped are of cast-iron, as before. It is filled with cement and is therefore non-inflammable in itself, and being solid affords no opportunity of performing the function of a flue. It has adequate means for uniting it with the columns above and below it in the series by means of the socket members and steel pins with which each column is provided, and the resulting construction is strong, cheap, quickly made, and readily assembled.

In the drawings, Figure 1 is a central vertical section through a series of columns embodying my invention. Fig. 2 is an enlarged transverse section on the plane of the line 2 2 in Fig. 1, showing the construction of the socket-flange; and Fig. 3 is a vertical section through a modified form of the central rod.

In the drawings, 1 is a shell or casing made of any suitable size, shape, and material, but preferably about nine feet in length, cylindrical or polyhedral in shape, and of rolled steel suitably secured together at its edges. 2 is the cap therefor made of cast metal and having a tubular body 20, which extends above the casing, an upper terminal plate 21, provided with an aperture 22 and a depend-well down into the casing 1 and snugly fit against the inner surface of the latter. The cap 2 is also provided with one or more laterally-projecting flanges or brackets 24 and with fins or ribs 25 when the same are deemed desirable.

At its bottom the casing 1 is provided with a socket member 3, comprising an upwardly-projecting thimble 30 and an outwardly-projecting flange 31 snugly fitting the inner surface of the casing 1. This flange is provided with openings 32 32, communicating with the interior of the casing and the purpose of which will presently appear.

Placed inside of the casing, fitting into the socket 3, and projecting downward well into the body of the column below the neck of the cap 2 is a rod 4, made of steel or any suitable material and having an upper end 41. The whole interior of the cap and casing surrounding the outer surface of the rod 4 and socket 3 is filled with a body of cement 5.

The manner of making and assembling the parts is as follows: The casing 1 is first made and the cap 2 fitted therein. The parts so arranged are then placed vertically, but upside down, upon a platform which is recessed to receive the upper end 41 of the rod 4, which when the parts are in that position projects below the plane of the plate 21. The cap and casing are then filled with cement, which is tapped or rammed tight well into place, the column being filled up to about the

dotted line 6, leaving a space 60 between it and the end of the column. The column is then removed and placed on a rack or other convenient support, and the cement is further allowed to harden. It will be seen that by the procedure just outlined there has been made practically a unitary construction out of the casing, the cap, the projecting rod, and the cement filling and which comprises a cement-filled cylinder having a head provided with a bracket and with a projecting axial rod. When the columns are to be assembled, the socket members must first be inserted. To do this, each column is again inverted, and the cup-shaped space between the line 6 and the bottom of the casing is filled with liquid or semiliquid cement, and the socket is then put in position. This causes the cement displaced by the metal of the socket member to ooze out through the openings 32 32 provided for that purpose, the space 60 at the end of the column surrounding the thimble being thus completely filled with the cement. When this portion of the cement has hardened around the thimble, the socket member is in place to stay. The columns are then assembled in the usual manner, the projecting rod at the top of each column fitting into the interior of the thimble of the socket at the bottom of the column next above it.

In Fig. 3 there is illustrated a modification of the central rod, in which it is shown made of a steel casing 44 and a cement filling 45. It will be understood that this compound rod is completely made before it is inserted into the cap and casing. This construction is very cheap and may be used to advantage if the strains to be transmitted can well be borne thereby.

It will be observed that in this construction the cap can be made just as large as the casing and need be made no larger. This permits of a desirable gain in space. The bracket member and the cap rest upon the casing, and consequently there are no torsional strains on the latter. When the cap overlaps the column and is of greater external diameter than the same, there is a tendency under stress for the cap to rotate and press in its lower edge against the side of the casing and crack the column at that point. By making the cap of the same external diameter as the casing the disadvantage is overcome, for the reason that the strains are transmitted vertically, all the weight upon the girders passing downward through the column in a vertical direction, in which direction the column is strongest to resist rupture. Unskilled labor can be employed in the construction, assembling, and erection of these columns at a great saving of expense.

What I claim as new is—

1. A column comprising a hollow casing, a cap seated on the same, the cap and casing

being of substantially identical external diameter, and a filling within the casing adapting the column to resist crushing strains.

2. A column comprising a hollow casing, a hollow cap seated thereon and extending above the same and having a reduced neck extending into the casing, the cap and casing being of substantially identical external diameter, and a filling in said casing and cap adapting the column to resist crushing strains.

3. The combination with a hollow column, of a hollow cap of substantially identical external diameter and terminating in an apertured plate and provided with means for securing the cap inside of the column, and provided also with an external bracket.

4. The combination with a hollow column, of a hollow cap of substantially identical external diameter, and terminating in an apertured plate and provided with means for securing the cap inside of the column, consisting of a dependent neck fitting snugly inside of the column, the column and cap being filled with plastic material.

5. The combination with a hollow column, of a hollow cap of substantially identical external diameter and terminating in an apertured plate and provided with means for securing the cap inside of the column and provided also with an external bracket, the cap and column being filled with plastic material.

6. The combination with a hollow column, of a socket member comprising an inwardly-extending thimble, and a projecting flange fitting snugly within the column and which flange is provided with apertures communicating with the interior of the column.

7. A new article of manufacture, comprising a hollow casing provided with a tubular cap of substantially the same external diameter as the column and having a neck adapted to fit inside of the casing and which cap is also provided with an upper apertured plate; a socket member consisting of an inwardly-projecting thimble and a flange adapted to fit the casing; a rod passing through the cap and projecting down into the casing and a body of plastic material filling the space within the cap and casing and surrounding the rod and socket-thimble.

8. The combination with a hollow column, of a hollow cap of substantially the same external diameter as the column and terminating in an apertured plate and provided with a neck adapted to fit snugly the interior of the column and a rod passing through the apertured plate and projecting outwardly beyond the same and inwardly into the column beyond the neck of the cap, the hollow column and cap being filled with cement whereby there is formed a substantial unitary column and cap with a projecting rod, of a second column adapted to be superimposed above the first column and provided

with a socket member adapted to receive the projecting rod of the first column.

9. The combination with a hollow column, of a hollow cap of substantially the same external diameter as the column and terminating in an apertured plate and provided with a neck adapted to fit snugly the interior of the column, and a rod passing through the apertured plate and projecting outwardly beyond the same and inwardly into the column beyond the neck of the cap, the hollow column and cap being filled with cement whereby there is formed a substantial unitary column and cap with a projecting rod, of a second column adapted to be superimposed above the first column and provided with a socket member having a snugly-fitting flange and an inwardly-projecting thimble adapted to receive the projecting rod of the first column.

10. The combination with a hollow column, of a hollow cap substantially identical in diameter and contour with the column, terminating in an apertured plate and provided with a neck adapted to fit snugly the interior of the column, and a rod passing through the apertured plate and projecting outwardly beyond the same and inwardly into the column beyond the neck of the cap, the hollow column and cap being filled with cement whereby there is formed a substantial unitary column and cap with a projecting rod.

11. The combination with a hollow column, of a hollow cap substantially identical in diameter and contour with the column and provided with one or more bracket members and terminating in an apertured plate and provided with a neck adapted to fit snugly the interior of the column and a rod passing through the apertured plate and projecting outwardly beyond the same and inwardly into the column beyond the neck of the cap, the hollow column and cap being filled with cement whereby there is formed a substantial unitary column and cap with a projecting rod.

12. A series of hollow columns vertically arranged, each having an upper hollow cap of substantially identical diameter as the same and provided with a neck adapted to fit snugly within its column and a lower socket member having a thimble provided with means for centering it, each column provided with a rod adapted to fit into the socket of the column above it and extending downwardly beyond its cap, each column and cap being filled with cement.

13. A series of hollow columns vertically arranged, each having an upper hollow cap of substantially identical diameter as the same and provided with a neck adapted to fit snugly within its column and a lower socket member having a thimble provided with means for centering it, each column

provided with a rod adapted to fit into the socket of the column above it and extending downwardly beyond its cap, each column and cap being filled with cement and each
5 cap having one or more bracket members.

14. As a new article of manufacture, a hollow column provided with a central projecting rod consisting of a tube filled with cement.

15. As a new article of manufacture, a hollow column provided with an apertured terminal plate and a projecting rod made of a tube filled with cement.

16. The combination with a hollow column, of a hollow cap terminating in an aper-

15 tured plate and provided with a neck adapted to fit snugly the interior of the column and a rod, consisting of a cement-filled tube, passing through the plate and projecting outwardly beyond the same and inwardly well within the columns, the columns and cap
20 being filled with cement.

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

GEORGE F. THORN.

Witnesses:

ROBERT J. HOSKEN,
WILLIAM R. BAIRD.