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3. SHEETS

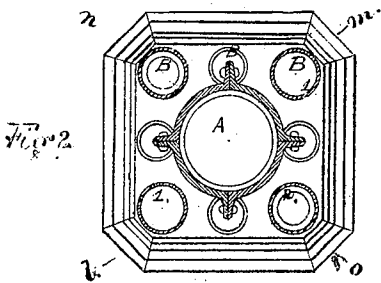
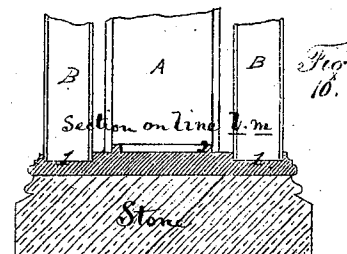
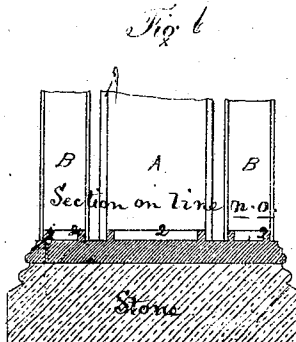
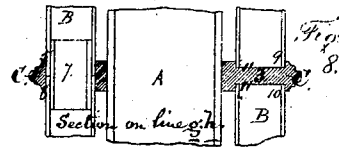
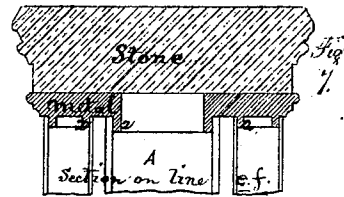
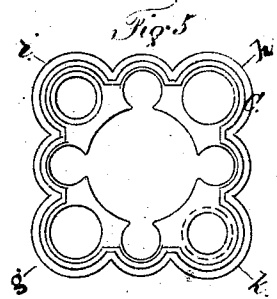
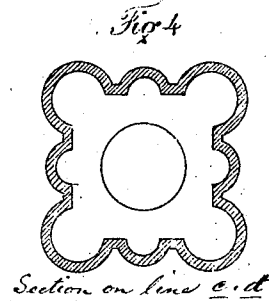
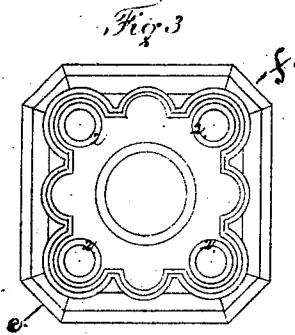
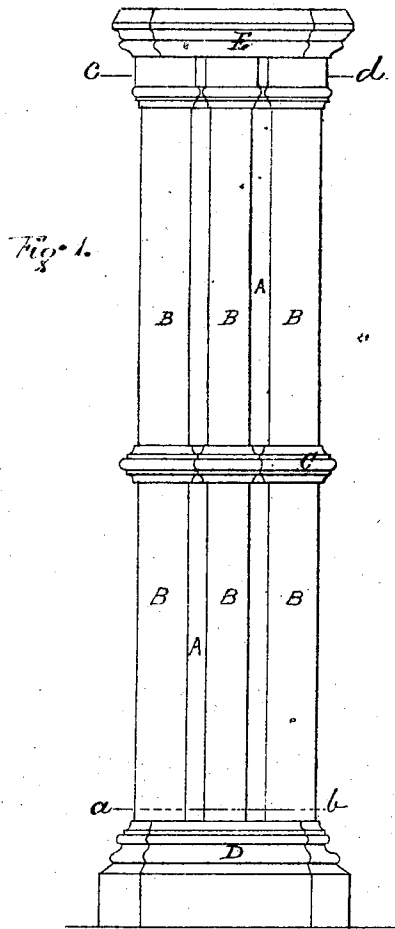
JOHN A. KAY'S

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IMPROVEMENT IN

PATENTED AUG 15 1871

METALIC COLUMNS.

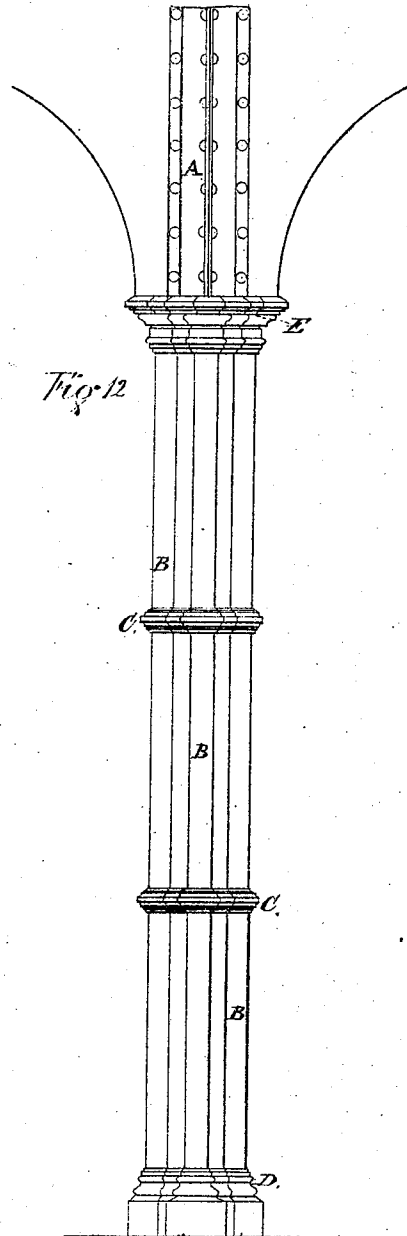
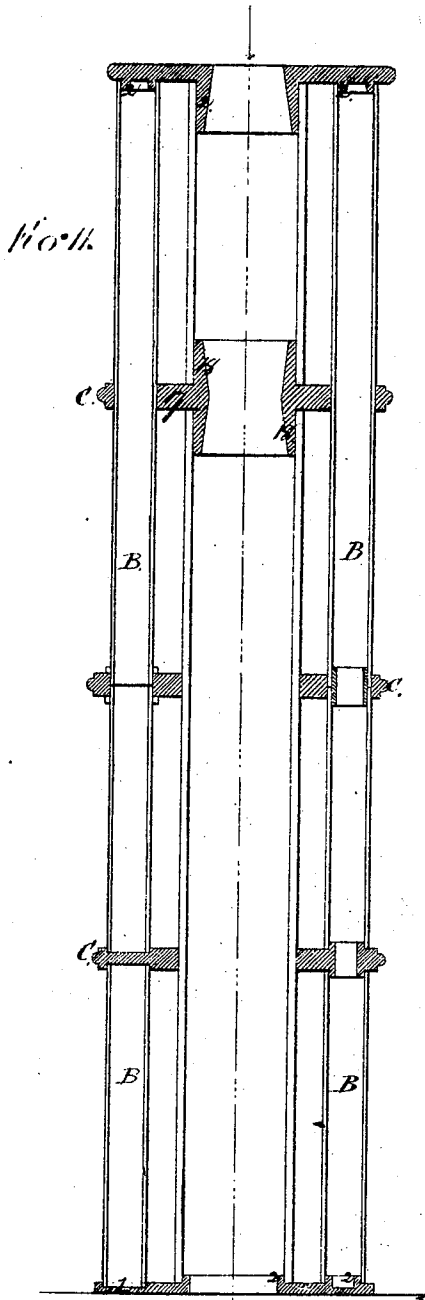


Witnesses.
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John A. Kay Inventor
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His Attorneys

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3. Sheets.

JOHN A. KAY'S IMPROVEMENT IN METALIC COLUMNS
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SHEET ' N^o 3
3. Sheets.

JOHN A. KAY'S IMPROVEMENT IN METALIC COLUMNS

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Fig. 13.

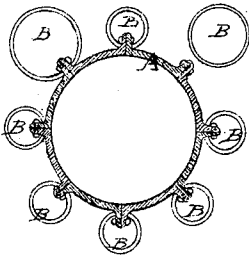


Fig. 14.

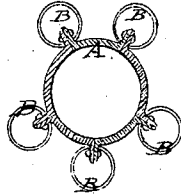


Fig. 15.

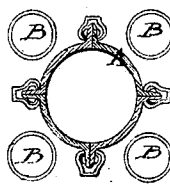


Fig. 16.

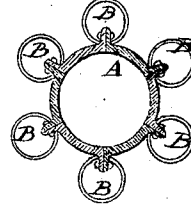


Fig. 17.

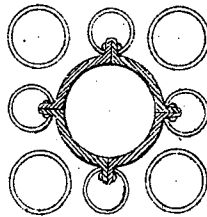


Fig. 18.

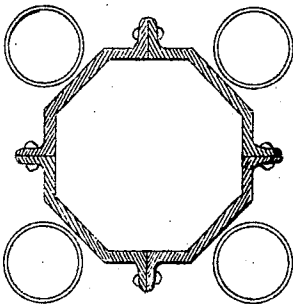
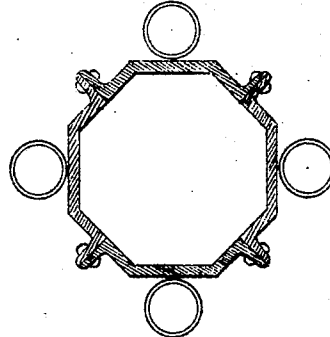


Fig. 19.



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UNITED STATES PATENT OFFICE.

JOHN A. KAY, OF ST. CHARLES, MISSOURI.

IMPROVEMENT IN METALLIC COLUMNS.

Specification forming part of Letters Patent No. 118,021, dated August 15, 1871.

To all whom it may concern:

Be it known that I, JOHN A. KAY, of St. Charles, in the county of St. Charles and State of Missouri, have invented certain Improvements in Metallic Columns; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practice it.

My invention has for its object the production of a novel and attractive style of metallic tubular column, combining lightness, strength, and economy, and adapted for buildings, bridges, trestles, and architectural purposes generally; and it consists in a compound column, composed of a group of metallic tubes, connected by metallic bands, which serve at the same time to bind together the parallel tubes and to connect the sections.

By way of illustrating my invention I have shown the same in the figures of sheet 1 and in Fig. 12 of sheet 2 of the drawing, with the outer tubes coupled to the style of column known in the market as the "Phoenix" column, the latter, as is well-known, being made of wrought-iron longitudinal sections united together so as to form a tube.

Figure 1 is an elevation of one of my compound columns, in which A is the central or Phoenix column. B B represent the external tubes arranged around the central one; C, a coupling-band, cast of iron or other metal; and D and E, respectively a base and a cap of cast-iron or other metal. Fig. 2 is a sectional plan at *a b* a little above the base. Fig. 3 is a plan of the cap E looking upward. Fig. 4 is a section on line *c d*. Fig. 5 is a top and bottom view of one of my connecting-bands, showing different arrangements for coupling grouped for convenience of illustration in the same figure. Figs. 6 to 10, inclusive, are vertical sections taken on the respective lines indicated in Figs. 2, 3, and 5. Fig. 11 shows modifications in construction of the central column and of the connecting-band and cap; Fig. 12, an exterior view of a column modified to adapt it to architecture; Figs. 13 to 23, inclusive, illustrate in cross-section some of the varieties of columns which may be made under my invention.

The essential features of the base and cap are that they shall each either have depressions adapted as to size and relative position to receive and hold snugly the ends of the several tubes which compose the compound column, as, for instance, at 1 in Figs. 2, 10, and 11, or that they shall have

corresponding bosses or elevations, annular or otherwise, which shall enter the ends of such tubes, as, for instance, at 2 in Figs. 2, 3, 6, 7, 10, and 11. The essential feature of the coupling-band or bands is that they shall be so made or cast as to have openings of proper size and in appropriate places to admit the central column and also the several tubes through them, and hold them all to their true relative positions; and also when one section of tube is placed above and coupled to another in the construction of one of my columns that the band shall have appropriate tenon-sockets, female joints, or equivalent or well-known provision for forming a strong and durable connection for the two adjacent or abutting ends. In the figures I have shown a number of ways in which I construct these bands and make these connections. It is evident, however, that many other mechanical equivalents of these modes of construction may be used in carrying out my invention. At the left-hand side of Fig. 8 I have shown the band as receiving the ends 5 6 of two sections of the outer tube B, mounted one upon the other, a short inner sleeve, 7, lapping the joint of the tubes. At the right side of Fig. 8 that part of the band which receives the ends of the two outer sections 9 and 10 is made solid and with recesses or cavities 11, as seen. At 12, Fig. 9, annular bosses 13 and 14 enter the bores of the sections of the tube. At 15, Fig. 9, sleeve-bearers or collars 16 are affixed to the exterior of the tubes near their ends and rest upon the coupling-band, the tubes passing through the band. The ends of the section of tube may in this mode of connection come together, as shown, or not, as may be expedient. These sleeve-bearers or rings may be screwed to the tubing or attached by set-screws in the ring. At 17, Fig. 11, I have shown for joining two sections of the central column a coupling-band having a tenon-socket, 18 18, cast integral with the band. A threaded sleeve placed inside the ends of two tubes or pipes may serve to connect them, the ends of the tubes bearing on the casting or band. The exterior of the bands, caps, or bases may be made or ornamented with any desirable moldings, or floral or other embellishments. Any available form of casting and coupling may be used to connect the tubes at their various stages of height; and also to couple the central or main tubes to the casting should it be necessary to use them in tiers to obtain the height required. From the above it will be seen that my com-

pound column can be made of any desired height, although made up of short sections; that great strength is secured with comparative lightness; that as the Phoenix and Keystone and similar columns are rolled in sections of different thicknesses to suit the strength required, and the wrought or cast-iron tubing or pipe added in my invention gives with the uniting-bands great additional strength, I can use a lighter size of central column than has heretofore been used to support a given weight; and the coupling of the tubes around the column by means of the bands may be at regular or alternate intervals, as the market shapes, sizes, and lengths may demand or occasion may require. Any kind of metal may be used adapted to the purpose for which the column is employed, and the central column may be of cast as well as of wrought metal. In some cases I combine a wrought-iron central column or shaft of any known make, shape, or pattern with external tubings made of cast-iron or any other metal suitable for the purpose, the caps and bases of the compound column being of any desired shape and connected together in like manner, as above stated. The central column may run from base to cap, and the smaller pipes or colonnettes be coupled and banded at any desired height. The colonnettes may break joints

alternately with each other or with the central tube, or otherwise, as desired; and for great heights two, three, or more central or Phoenix columns may be combined in clusters in the same manner as herein described. The colonnette-tubes or pipes may be drawn or lap-welded or cast. The shape of the material covering the flanges of the central shaft may be varied, as, for example, in Fig. 15. A false base may be used, as shown in Fig. 11, and in similar manner a false cap may be applied.

My improvement will be found applicable in the Gothic, Moresque, Romanesque, Byzantine, and Venitian styles of columns, and, in fact, wherever columns have to carry great weight and need to be of small diameter, and where good taste and ornamentation are essential.

I claim—

A compound column, composed of a group of metallic tubes connected by metallic bands, which serve both to bind together the parallel tubes and to connect the sections of the separate tubes, substantially as shown and described.

JOHN A. KAY.

Witnesses:

JULIUS MOULTON,
LUCIUS ROBINSON.