

CHARLES H. PARKER.

Improvement in Wrought-Iron and Steel Columns.

No. 114,705.

Patented May 9, 1871.

FIG. 1.

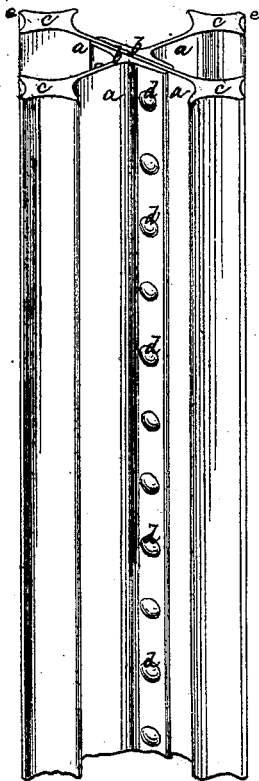


FIG. 4.

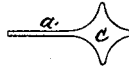


FIG. 3.



FIG. 5.

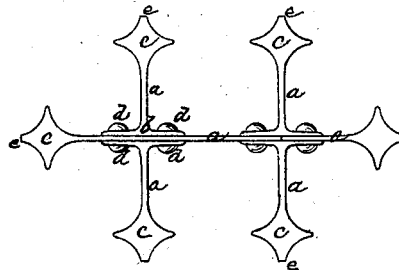


FIG. 6.

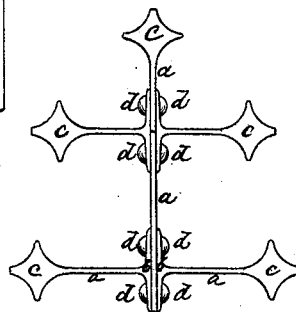


FIG. 7.

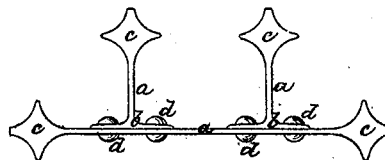


FIG. 2.

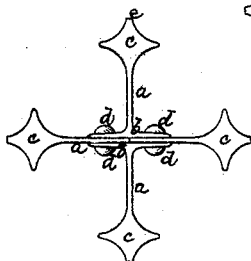
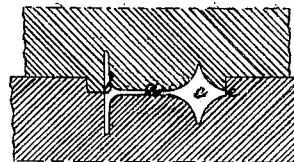


FIG. 8.



Charles H. Parker

by his attorney

A. S. S. S.

WITNESSES. C. B. Nottingham

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# United States Patent Office.

CHARLES H. PARKER, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 114,705, dated May 9, 1871.

## IMPROVEMENT IN WROUGHT-IRON AND STEEL COLUMNS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To whom it may concern:*

Be it known that I, CHARLES H. PARKER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Wrought-iron and Steel Columns for Bridge-Posts and Chords, and for other engineering and architectural purposes, of which the following is a specification.

My invention consists, principally, in the manufacture of wrought-iron or steel columns composed of several beams, formed substantially as hereinafter described, and placed together so that the web of each beam may stand at an angle with the web of the one to which it is to be secured, the two beams being united by means of angle-irons or flanges, bolted, riveted, or otherwise fastened to them.

It further consists in a wrought-iron or steel beam, provided with a head, diamond-shaped, with concave faces in cross-section; and

Further, in other details, which will be hereinafter mentioned.

To enable others skilled in the art to understand and use my invention, I will now proceed to describe the manner in which the same is or may be carried into effect by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of a portion of a column made in accordance with my invention.

Figure 2 is an end view of the same.

Figure 3 is an end view of one form of beam used in the column.

Figure 4 is a like view of another form of beam used in the same column.

Figures 5, 6, and 7 are end views of columns, representing some of the different ways in which the beams may be put together.

Figure 8 is a sectional view, representing the manner in which I prefer to roll the beams.

In making the column I prefer to use beams having the shape in cross-section represented in fig. 3—

*a* representing the web;

*b*, the flange at one end of the web; and

*c*, the diamond-shaped head with concave faces at the other end, the whole being, preferably, rolled in one piece. The head may be made in any other shape desired; but the "concave diamond head," shown in the drawing, is better adapted to resist compressive strain in the direction of the length of the beams than any other form having the same number of inches of cross-section, and will make a stiffer column.

The flange *b* is what may be called a T-flange, extending an equal distance on each side of the web. This flange is useful to receive the bolts which pass through it and the web of the beam to which it is to

be secured; but it may be dispensed with, and the beam rolled in the shape shown in fig. 4; and, in this case, an angle-iron may be used to bolt together two sections or beams so made.

In figs. 1 and 2 is represented a form of column which is simple, of great strength, and has no hidden surfaces that can oxidize, and that cannot be reached at any and all times with a paint-brush. This column is made of two flanged beams, such as shown in fig. 3, and two beams without flanges, like that shown in fig. 4. The two latter are placed with their webs end to end and their heads outward.

Upon opposite sides of and at right angles with these beams are placed the flanged beams, with their flanges covering the joint formed by the two unflanged webs; and the four beams thus placed together are united by two rows of bolts, *d*, which pass through the flanges, and the webs included between them, as indicated in fig. 2. In lieu of using two unflanged beams of the four shown in fig. 2, one beam only may be employed, the web being made double the width of that shown in fig. 4, and rolled with a head on each end or edge. The general design of this column is that of four crosses, indicated by the concave diamond heads, united by their webs, to form one large cross; and when thus made, the column will possess great stiffness and capacity to resist strains of compression.

A modified form of this column is represented in fig. 5, the beam or beams with unflanged web or webs being combined with two pairs of transverse flanged beams instead of with one pair, as represented in figs. 1 and 2; and it is manifest that, by lengthening the longitudinal unflanged web, any number of transverse beams may be combined with it.

In figs. 7 and 8 are represented other columns, of modified form, which are peculiarly useful in architectural iron work, and in iron fronts where a flat surface on the back side of a column is desired, against which to build up brick-work. These instances are sufficient to illustrate the variety of forms which may be given to the column.

In addition to the advantages attending it, which have been hereinbefore stated, the various connections with the column for trestles and piers can be made with great ease, the projecting beams allowing the rods and other members of the structure to be pinned or yoked to the column with facility.

The outer edge of the concave diamond head, or that edge which is in the prolongation of the web, is made flat, as shown at *e*, the rolls in which the beam is shaped being made substantially as shown in fig. 8, which represents in section a portion of the two rolls with the dies in which the bar is pressed.

In order to increase the thickness of the metal in the beam the rolls are opened to a suitable extent; but, owing to the formation of the die with a flat or straight edge for the outer end of the diamond, and owing, also, to the manner in which the die portion of the upper roll sets into the die portion of the lower roll, the edge would still remain straight, as before, and would only be increased in thickness, and the four quarters of the diamond would each have still about the same amount of metal. By giving the diamond head a straight outer edge the rolls are not so liable to break or be injured as they would be were they formed to roll a rounded outer end or edge, for, in the latter case, there would be a sharp corner or projection formed in the right-hand corner of the die in the upper roll, which would be extremely apt to be broken off.

Having now described my invention, and the manner in which the same is or may be carried into effect,

What I claim, and desire to secure by Letters Patent, is—

1. An iron or steel column, composed of beams formed each substantially as specified, placed together and united substantially in the manner and by the means shown and described, whereby a column is

made not tubular or hollow, but solid throughout, with no interior surfaces liable to oxidation.

2. A wrought-iron or steel column, made substantially as described and shown in figs. 1 and 2—that is to say, composed of two beams, each having a head, web, and flange, and a beam or beams having a head and web but no flange, the flanged beams being arranged at right angles with and on opposite sides of the web or webs of the other beam or beams, and the whole united by bolts passing through the opposite flanges and the web included between them, as set forth.

3. A wrought-iron or steel beam, provided with a head, diamond-shaped, with concave faces in cross-section, substantially as herein shown and described.

4. A wrought-iron or steel beam, composed of a flange, a head, diamond-shaped, with concave faces in cross-section, and an intervening web connecting said flange and head, as shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

CHARLES H. PARKER.

Witnesses:

GEO. N. MARCH,  
H. W. KITTREDGE.