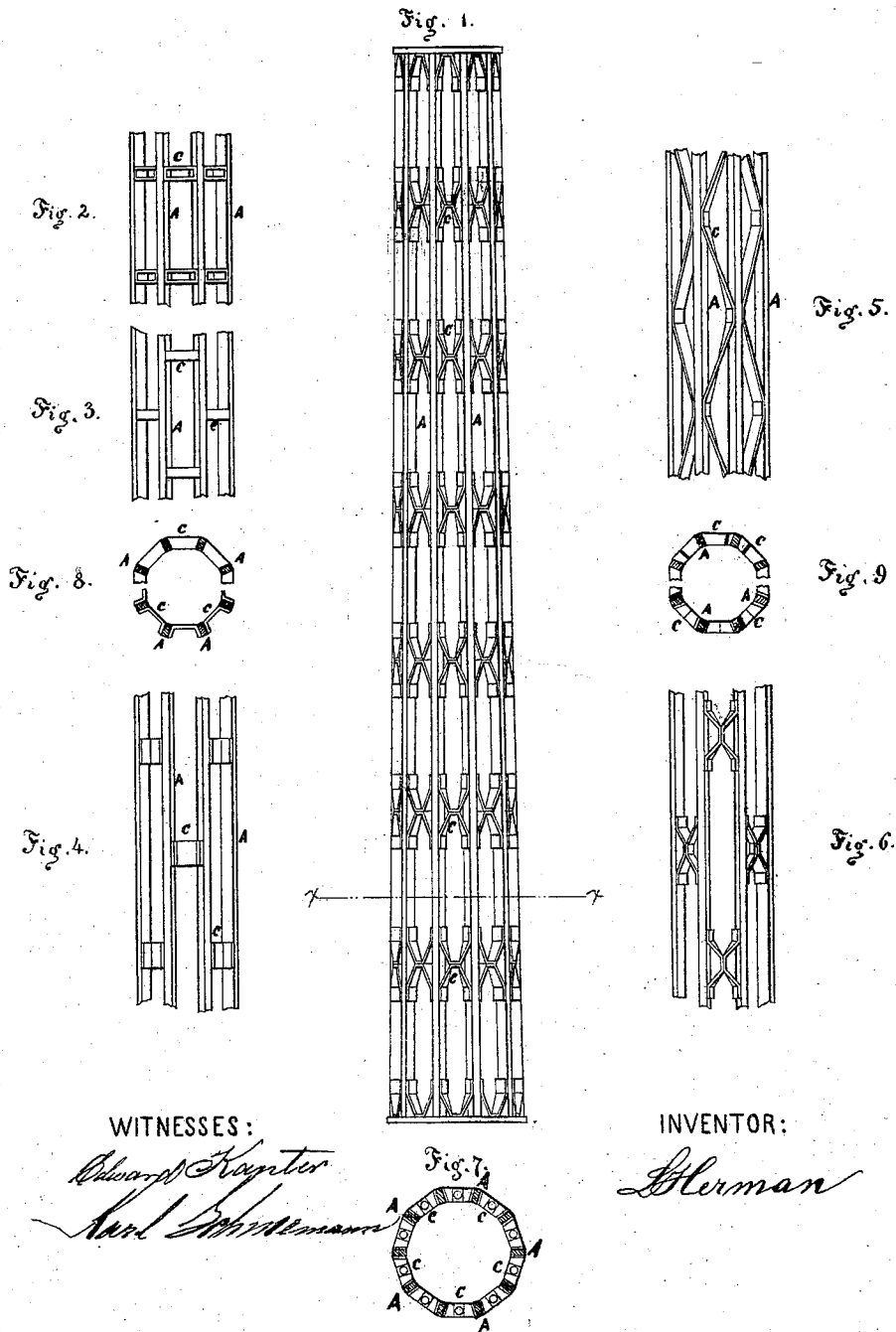


L. HERMAN.

Wrought Iron Columns.

No. 134,987.

Patented Jan. 21, 1873.



UNITED STATES PATENT OFFICE.

LUDWIG HERMAN, OF DETROIT, MICHIGAN.

IMPROVEMENT IN WROUGHT-IRON COLUMNS.

Specification forming part of Letters Patent No. 134,987, dated January 21, 1873.

To all whom it may concern:

Be it known that I, LUDWIG HERMAN, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Metallic Columns; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is an elevation of my improved column, showing one form of its construction; Figs. 2, 3, 4, 5, and 6 are partial elevations, showing various modifications in the stays; Fig. 7 is a cross-section at *x x* in Fig. 1; Figs. 8 and 9 are half cross-sections of the figures above and below them, respectively.

Like letters refer to like parts in each figure.

The nature of this invention relates to an improvement in the construction of metallic columns whereby the amount of metal employed shall not exceed the amount required to resist the pressure to which the columns shall be subjected, which columns can also be easily constructed or put together from bars of merchant iron or steel without bands, rings, or hoops on the exterior or interior, and without filling blocks or lines, such as are usually employed in sectional columns. The invention consists in the radial arrangement of bars or plates in the column secured together in position, and against any tendency to buckle, by stays bolted or riveted between the members of the column, as more fully hereinafter set forth.

In the drawing, A represents flat bars of merchant iron standing on end on a base-plate, and disposed radially from the axis of the column, in which position they are secured together by the intermediate stays C, also of flat bar-iron, which are riveted or bolted to and through the members A.

In constructing a column, I take four or more of the bars A, which may be flat, square, round, oval, L, or T shape; but preferably flat bars, the sum of whose united areas gives the area of metal required to resist the pressure to be sustained by the columns, and connect them by the stays, at intervals, on the same horizontal planes, as in Figs. 1 and 2,

or in alternating planes, as in Figs. 3, 4, 5, and 6, according to the requirements of the occasion. In any event the stays are placed sufficiently near each other to prevent any tendency of the bars to buckle.

The form of stays may be varied from those shown in the drawing, in all cases being of bar or plate iron shaped over a "former" to the required conformation.

The stays in Fig. 1 are each made up of two members, somewhat in the form of a frustum of a pyramid riveted together through the apexes. Those shown in Fig. 6, are similar in design, but with their riveted seams disposed longitudinally between the webs of the column; in Fig. 2 the stay is formed of a quadrangular box; in Fig. 3 it is the same, only the opening is in a vertical plane; in Fig. 4 it is formed like an open channel-bar, in section, as seen in the lower half of Fig. 8; and in Fig. 5 the brace or stay is a continuous bar bent back and forth between the bars to which it is riveted at the points of contact.

I do not wish to be confined to any particular form of stay, whether shown or not, as others constructed in different forms, but similarly applied, will serve my ends—*i. e.*, to stiffen the webs and prevent them from buckling.

By varying the number and sizes of the bars I can readily proportion the cross-section of the column to the weight to be sustained. The column may be straight or tapering from the base to the top, or tapered from the middle to the ends, as circumstances may require.

In the construction of this column I do not require flanged or channeled bars, nor special shapes of rolled iron—always expensive in cost, but use none but ordinary merchant bars, which can be worked into columns without loss or waste. Nor does the manufacture of the column require special machinery or tools except the "formers" for shaping the stays—an item of no little consequence—as, for instance, in the erection of a bridge or pier at a distance from the contractor's shops, which necessitates the purchase of material, freighting it to the shops, constructing the columns, shipping them to the place where they are to be erected, and paying two freights, as is generally the case; while in my case I buy merchant iron on the spot or wherever

cheaper, and construct my columns at or near the place where they are to stand.

I disclaim the invention of a strut composed of four angle-irons secured together by bolts, as such have been used heretofore; but

What I do claim as my invention is—

An improved iron or steel column, composed

of four or more radial bars, A, connected together at intervals by the stays C, substantially as described and shown.

LUDWIG HERMAN.

Witnesses:

EDWARD KAPITER,

CARL SCHMEMANN.