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FREDERICK H. SMITH.

Improvement in Metallic Columns.

No. 121,432.

Patented Nov. 28, 1871.

Fig. 1

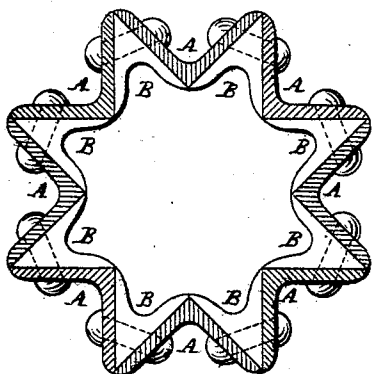


Fig. 4

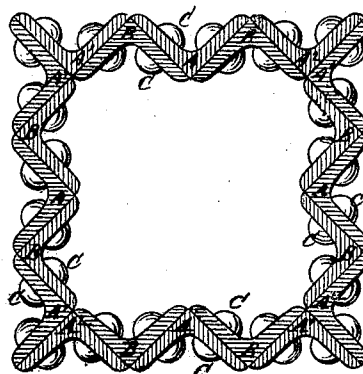


Fig. 2.

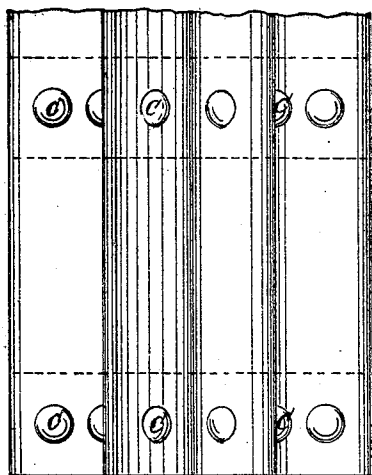
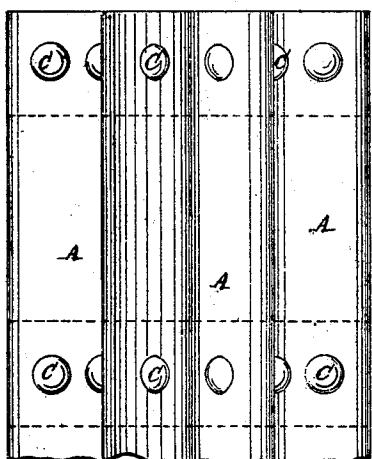
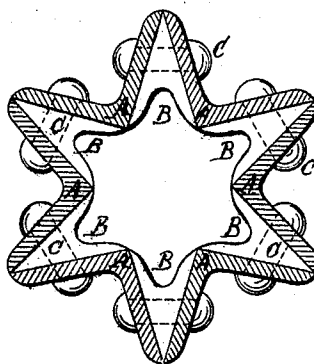


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

FREDERICK H. SMITH, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN METALLIC COLUMNS.

Specification forming part of Letters Patent No. 121,432, dated November 28, 1871.

To all whom it may concern:

Be it known that I, FREDERICK H. SMITH, of the city and county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Metallic Columns for engineering, architectural, and other purposes, of which the following is a specification:

My invention consists of a column of which the exterior, or both exterior and interior, is composed of angle-irons arranged, substantially as hereinafter described, so as to produce a hollow column having an exterior corrugated surface. The column is composed either wholly of rolled metal or with an exterior of rolled metal, and may be formed of iron, steel, or other metal.

Some of the advantages of such a column are: First, its surfaces being corrugated are therefore stiffer in all directions than those of a plain column, and requires less riveting per foot at each joint. Second, it can be made up in either the smallest or largest sections required in practice by simply increasing or diminishing the number of angle-bars used, the bars themselves remaining of such small size as to be easily rolled and handled. Third, the metal used is cheaper than that used in other wrought-metal columns, because the bars used in the latter are, so far as I am aware, invariably made of triple-rolled iron; whereas, the ordinary angle-bars out of which my improved column is made are only double rolled, the difference in cost in favor of my system being fully one cent per pound or twenty dollars per ton. Fourth, an increase in economy over other columns now in use, owing to the fact that the outlay for rolls required to make a complete assortment of angle-bars is much less than that required to make segments with ever-varying angles and thicknesses, as required in other columns. Fifth, the facility with which it may be put up, and the ease with which the materials of which it is composed may be procured, inasmuch as the angle-iron is a standard article of manufacture and can be bought or ordered at any iron-dealer's establishment.

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

Figure 1 is a transverse section, and Fig. 2 an elevation of a "star" column made in accordance

with my invention. Fig. 3 is a transverse sectional view of a similar column made with a less number of angles than the one shown in Figs. 1 and 2. Fig. 4 is a transverse section of a column having substantially a rectangular or square section.

The exterior of the hollow metallic column in Fig. 1 is composed of angle-bars A of rolled iron, steel, or other metal placed together in the manner shown so as to form a corrugated or star column, with the points *a* about equidistant from the center or axis of the column. The bars are sustained in this position by interior angle-bars B, laid back to back with the exterior bars, as shown, the interior bars being placed and fitted snugly in the angle or space intervening between the interior opposite sides of each pair of exterior bars A. The column when thus put up is riveted by means of rivets or bolts C passing through the adjacent sides of each pair of exterior bars and the intervening interior bar; or the riveting or bolting may take place from the inside to the outside of the column, as shown in Fig. 4, though I prefer the arrangement first described, as it permits the riveting or bolting to be wholly on the exterior of the column. The interior bars may be of rolled metal, formed each into an angle-iron of suitable shape for the purpose for which it is designed, and extending the whole length of the column; or they may be made in short pieces, so as to act as mere thimbles for the rivets, which short pieces or thimbles in each angle may be placed at suitable distances from each other, with spaces intervening between them throughout the length of the column. In the latter case they may be made of cast-iron or other material, and this construction of the interior bars is represented in Figs. 1, 2, and 3. In Fig. 3 the column is a star-column, so-called, like that in Fig. 1, but with a less number of corrugations or points. Its construction will be readily understood from the description above given of the column shown in Figs. 1 and 2. In Fig. 4 I have represented, in further elucidation of my invention, a corrugated column having substantially a rectangular or square form in cross-section. This column is composed of interior and exterior angle-irons or rolled-metal bars placed back to back, as shown, so as to break joint, and so arranged that the external points or projecting angles on each face shall all be in

one right line, each corner of the column being squared and finished by means of two angle-irons, $A^1 A^2$, fitted to each other and to the interior angle-bars which meet at the corner, in the manner represented in the drawing. In this column all the rivets or bolts pass through from the interior to the exterior of the column, excepting the rivets or bolts which hold together the corner pieces $A^1 A^2$ at each corner, the riveting in this instance being effected wholly upon the exterior of the column.

It is unnecessary to describe the way in which a column thus constructed may be put up, as this will be readily understood by those skilled in the art to which my invention pertains without further explanation, as the bars, after being suitably formed and fitted for any desired section, can be punched or drilled and bound upon a mandrel or core or otherwise held together or in position until the riveting or bolting operation is completed.

The above examples are sufficient to indicate the manner in which my invention may be carried into effect.

It is manifest that the arrangement of the angle-bars may be varied to produce columns of other sections than those represented, and I wish it to be understood that I do not limit myself to the forms which I have herein shown in illustration of my invention; but

Having described my invention and the man-

ner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. A hollow metallic column, composed of angle-bars placed together substantially as herein described, with a metallic backing or support in each of the angles formed by the junction of any two of said bars, the bars and their metallic backing or supports being united by rivets or bolts, substantially as shown and set forth.

2. A hollow wrought-metal corrugated column, composed of angle-bars laid back to back so as to break joint, and united substantially as herein shown and described.

3. The combination, in a hollow metallic column, of external wrought-metal angle-bars placed together so as to form a corrugated surface, as described, and internal cast-metal thimbles placed in the angles formed by the junction of the bars and united with the same by riveting or bolting, substantially as shown and set forth.

4. The manufacture of hollow metallic corrugated columns of angle-bars or angle-irons, substantially as herein set forth.

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

FREDERICK H. SMITH.

Witnesses:

G. E. SANGSTON,

THOS. M. BEADENKOPF.

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