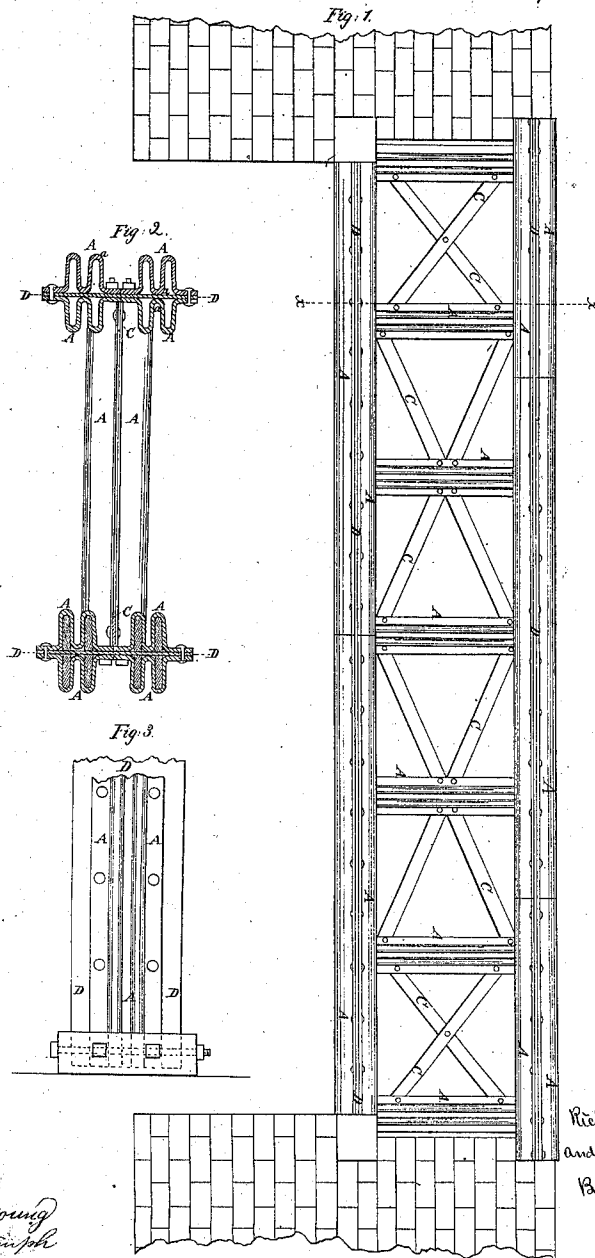


R & M J. Montgomery. Bridge.

N^o 81666

Patented Sept. 1, 1868



Witnesses:
E. F. Young
G. W. Thompson

Inventors:
Richard Montgomery
and M. J. Montgomery
By David A. Burn
att'y.

United States Patent Office

RICHARD MONTGOMERY AND MARY J. MONTGOMERY, OF NEW YORK, N. Y.

Letters Patent No. 81,666, dated September 1, 1868.

IMPROVEMENT IN BRIDGES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that we, RICHARD MONTGOMERY and MARY J. MONTGOMERY, of the city, county, and State of New York, have invented certain new and useful Improvements in the Form, Construction, and Arrangement of Beams and Columns for Bridges and other Structures; and we do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents our invention as applied in the construction of a bridge.

Figure 3, its application in a column for building purposes, and the support of elevated structures, and

Figure 2 is an enlarged vertical section in the line *xx* of fig. 1.

The nature of our said invention consists, first, of an improvement in the construction of double-corrugated beams and columns, by the insertion or interposition of a plain, longitudinal binding-plate between the two opposite faces of the double longitudinally-corrugated plates, constituting said beams and columns; and, second, in a novel combination of the diagonal stays or braces of bridges, roofs, and similar structures with said double-corrugated beams and columns, by causing the said stays or braces to pass through, between the opposite faces of the double-corrugated plates, forming said beams and columns, as will be more fully shown.

In the accompanying drawings, *A A* represent metallic plates, corrugated longitudinally in double folds. Where the greatest possible strength is desired, each fold is increased in thickness at its curve *a*, as shown in fig. 2. Such plates *A A*, when united with their outer edges face to face, possess immense strength in proportion to their weight in resisting any strain having a tendency to bend or break them in a plane coincident with the direction of their folds, but they are comparatively deficient in strength in a direction at right angles thereto, from the fact that they receive no support in that direction, and that the folds are liable to spread open and apart when unduly strained. To obviate this defect, and to equalize the strength of the double corrugated beams and columns in all directions, we insert between the two doubly-corrugated plates *A A* a plain, straight, comparatively thin plate, *D*, corresponding in length therewith, and of such a width as that its edges shall extend out to and beyond the outer edges of the corrugated plates. When it is so inserted, the two corrugated plates *A A* are united upon this intermediate binding-plate *D*, by means of rivets passing entirely through them all, as seen in fig. 2.

Columns, beams, or girders so constructed, possess a maximum of strength with a minimum of weight, and afford an equal resistance to strain, whether of tension, torsion, or compression, in all directions alike.

In using the double-corrugated beams, in combination with diagonal braces *C*, we insert or pass the braces *C* between the opposite doubly-corrugated plates *A A*, forming the same, instead of the plain binding-plate *D*, just described, either omitting said plate *D* entirely, or so cutting it away as to leave the space required for the insertion of the stays. This mode of combining the stays with the supporting-columns and beams of bridges, and similar structures, avoids all necessity of cutting or weakening the latter, and affords a very strong combination of the two, increasing greatly the strength of the entire bridge, roof, or other structure.

Our improved columns are supported at their lower ends by heavy plates or pieces, so grooved as to become counterparts of the corrugated plates of the column. They are fitted against these plates at their base, and drawn together thereon by means of bolts and nuts, as illustrated in fig. 3.

Transverse bolts are also inserted through the bed-plates, to pass through the folds of the corrugated upright plates forming the column, and a very strong, sure combination of the same with the base or foundation thereof is thus obtained.

Having thus fully described our invention, we claim therein as new, and desire to secure by Letters Patent—

The combination, substantially as and for the purpose herein set forth, of an intermediate binding-plate, *D*, with the doubly-corrugated plates *A A*, forming the double-corrugated beams and columns herein described.

We claim also, in the construction of bridges, roofs, and similar structures, with double-corrugated beams

and columns, the combination of diagonal strays and braces with said beams and columns, by passing the stays or braces between the opposite plates of the beams and columns, substantially in the manner and for the purpose herein set forth.

The foregoing specification of our improvements in corrugated-metal structures, signed by us, this 22d day of July, 1868.

R. MONTGOMERY,
MARY J. MONTGOMERY.

Witnesses:

DAVID A. BURR, }
H. H. YOUNG, } as to RICHARD MONTGOMERY.
H. T. McILWAIN, }
JOHN J. CRAWFORD, } as to MARY J. MONTGOMERY.