D. HAMMOND & M. ADLER.

Wrought Iron Supports for Bridges.

No. 153,483. Patented July 28, 1874.

Fig. 1.

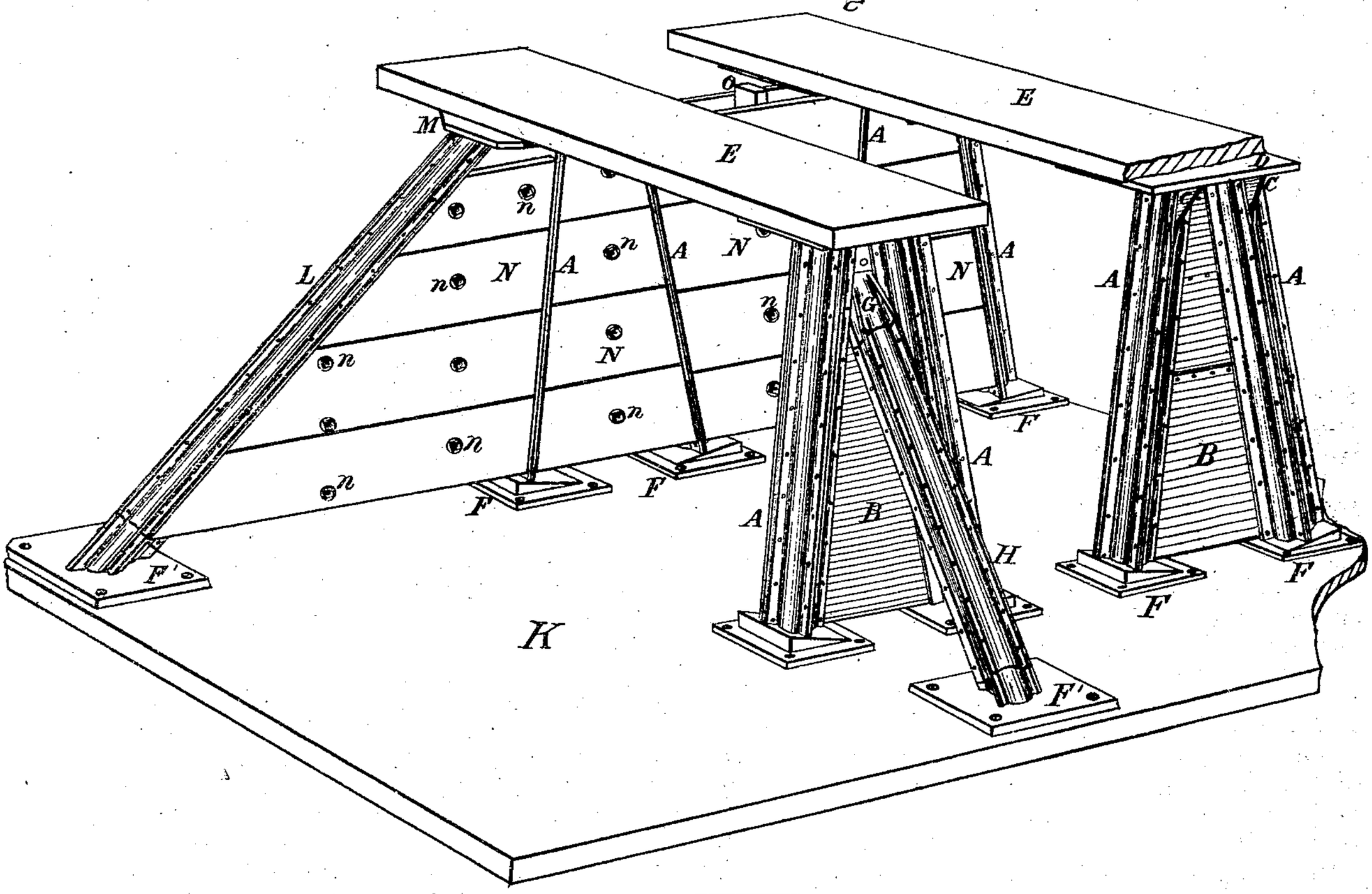


Fig. 4.

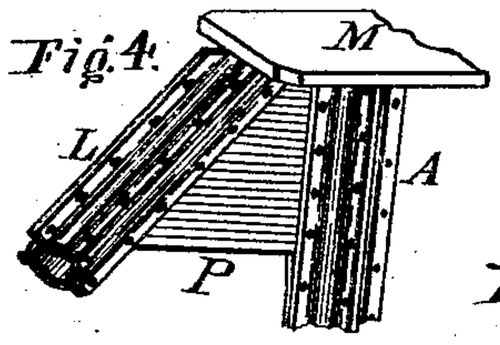


Fig. 2.

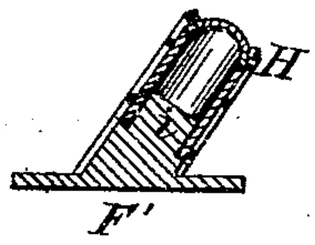
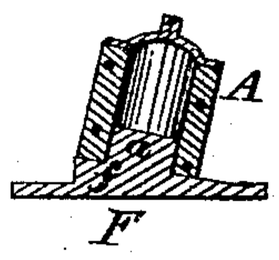


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

DAVID HAMMOND AND MICHAEL ADLER, OF CANTON, OHIO, ASSIGNORS TO WROUGHT-IRON-BRIDGE COMPANY, OF SAME PLACE.

IMPROVEMENT IN WROUGHT-IRON SUPPORTS FOR BRIDGES.

Specification forming part of Letters Patent No. **153,483**, dated July 28, 1874; application filed February 6, 1874.

To all whom it may concern:

Be it known that we, DAVID HAMMOND and MICHAEL ADLER, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Wrought-Iron Supports for Bridges and other Structures; and that the following is a full, clear, and exact specification thereof, which will enable others skilled in the art to make and use the said invention:

Our invention relates to the construction of an economical and durable wrought-iron support for bridges, which is especially adapted to localities where there is a scarcity of stone or suitable building material for piers and abutments.

Said invention consists in the construction of a support formed of two tubular columns, made of two or more iron-column segments riveted together and united in a triangular form by an iron diaphragm placed between and riveted into the columns, said support resting on suitable bases, and being surmounted by a suitable capital covering the tops of both flanged columns, and forming bearings for the shoes of the bridge-girders, as is hereinafter more fully shown. Said invention also consists in the combination of two triangular-shaped iron plates, or a trapezoidal plate, with the heads of the columns of the iron support, whereby a wider and stronger bearing is obtained for the capital of the support, as is hereinafter more fully shown. Said invention also consists in the combination, with said iron support, of an iron leg or brace extending from near the head of the support, out at right angles to the plane of said support to a base secured to the foundation, at some distance from the bases of the support, thereby bracing the support against side movement and adapting it for use as a bridge-abutment, as is hereinafter more fully shown. Said invention also consists in the combination, with said iron support, of an iron leg or ice-breaker extending from near the head of the support out in the plane of the support to a base secured to the foundation, at some distance in front of the bases of the support, thereby protecting the support more effectually against drift or ice, and better adapting it to use as a bridge-pier, as is hereinafter more fully shown. Said invention also consists in the combination of two or more iron supports of the construction hereinbefore described, with plank or timber siding, and with or without the ice-breaker leg specified in preceding clause, the whole forming a very strong and reliable pier-support for localities where there is a large amount of floating logs, drift, or ice, in the stream to be bridged, as is hereinafter more fully shown.

In the accompanying drawing, Figure 1 is a perspective view, showing our iron support in its various applications. Figs. 2 and 3 are sectional views of the bases for the support, and its leg or braces. Fig. 4 is a detail view, showing the mode of attaching the ice-breaker leg to the iron support.

A A represent the iron columns of the support, which are here shown as being made of four-segment Phœnix column-iron, although other forms of flanged column-iron may be used instead, if preferred. These columns are united in a triangular form, as shown by the diaphragm B, which is riveted in between the column-flanges, and which may be made a continuous plate, as shown, or may consist of several narrow plates placed one above the other, or latticed together, as may be found most expedient. The columns A rest on bases F made with an inclined seat, *f*, to suit the slope of the column, and with a boss, *a*, which fits into the end of the column, where it can be secured by bolts or rivets. The heads of the columns A A are surmounted by a capital, D, which can be made of any desired form on top to receive the end of the bridge-girders, which are represented by the planks E.

The columns A are not usually as wide as the shoes or ends of the bridge-girders, and in order to obtain the proper bearing for a capital, D, of sufficient width to receive said ends, the triangular plates C are riveted in between the column-flanges, as shown in Fig. 1, and extend out to form a bracket or support for the capital D, as shown.

The plates C C are here described as being separate plates, but, if preferred, a trapezoidal plate can be used, which will extend through

the column and out at each side to form the supporting-brackets, as will be readily seen.

In order to brace the support against side motion, as is required in a bridge-abutment, the head G is fitted and secured in between the columns A A and against the plate B, as shown in Fig. 1, and from it extends the brace H, which is secured to a boss on the head G, and extends down to a base, F′, where it fits over a boss, *i*, as shown in Fig. 2, to which it is bolted or riveted. The ice-breaker L for the support is secured to the front column A by a plate, P, which is riveted into the column A and breaker L, as shown, the column, breaker, and plate being all dressed off flush on top, so as to be neatly covered by the capital M, as shown in Fig. 4. The lower end of the breaker L rests on and is fastened to a base, F′, in the same manner as the brace H in Figs. 1 and 2. The ice-breaker is here shown as running from the head of the support, but it may be attached below the head, especially in very high supports.

In order to unite two or more supports together in a pier, to more effectually resist the action of drift or ice, the plank or timber sides N are fitted into the sides of and between the supports A, and (if the breaker L is used) between the breaker L and front support A on each side, where they are rigidly secured by bolts *n* running through the planks and column-flanges, and through intermediate studding O, thus uniting the several parts into one solid structure, and preventing drift or ice from getting between the legs or catching on the flanges of the supports.

In the practical application of our iron supports they are placed two or more abreast and in line, according to whether the bridge has two or more girders, the heads of the supports being united by a timber or iron strut running from head to head in the plane of the supports.

The foundation K usually consists of timber laid lengthwise under the supports, and preferably of sufficient length to extend under both supports. This foundation is well bedded in the river-bottom, and the bases F are securely bolted thereto; and for greater security rip-rap can be thrown around the foundation and bottom of the supports, to give greater stability to the structure and prevent washing under the foundation.

Where the brace H is used for abutment-support a timber is usually framed in at right angles to the main foundation, to support the base F′, and where the ice-breaker L is used the main foundation-timbers are extended sufficiently to form a foundation for the base F′ of said breaker.

What we claim as our invention is—

1. An iron support for bridges, consisting of two wrought tubular flanged columns united at their upper ends and surmounted by a common capital, said columns having separate bases and being united by a diaphragm riveted between their flanges, substantially as and for the purpose specified.

2. The combination, with the columns of an iron support, of a bracket plate or plates riveted into the end of the column and forming an additional support for the capital, substantially as and for the purpose specified.

3. The combination, with the tubular flanged column-support herein specified, of a tubular side brace extending out at right angles to the plane of the support, and rigidly secured thereto and to the timber foundations, substantially as and for the purpose specified.

4. The head G for the side brace of an iron support, fitted between the columns of the support and provided with a boss for the brace, substantially as and for the purpose specified.

5. The combination, with a triangular iron support for bridges, of an iron ice-breaker leg, extending from the front column of the support out in front and in the plane of the support, and securely attached to the support and the timber foundations, substantially as and for the purpose specified.

6. The herein-described attachment of the ice-breaker leg to the iron support by means of a plate, P, riveted into the column of the support and the ice-breaker leg, substantially as and for the purpose specified.

7. The ice-breaker leg, attached by means of a plate, P, to the head of the support, so that the support-columns, plate P, and ice-breaker leg all act as bearings for the capital M, substantially as and for the purpose specified.

8. The combination of two or more iron supports, each consisting of two flanged columns united by diaphragm, and having separate bases and a common capital with plank sidings at each side, and with an ice-breaker leg, said supports being placed in the same plane and secured to a common timber foundation, substantially as and for the purpose specified.

As evidence of the foregoing witness our hands this 31st day of January, A. D. 1874.

DAVID HAMMOND.
MICHAEL ADLER.

Witnesses:
JOB ABBOTT,
R. S. SHIELDS.