

(No Model.)

G. WEGNER.
SUSPENSION BRIDGE.

No. 297,479.

Patented Apr. 22, 1884.

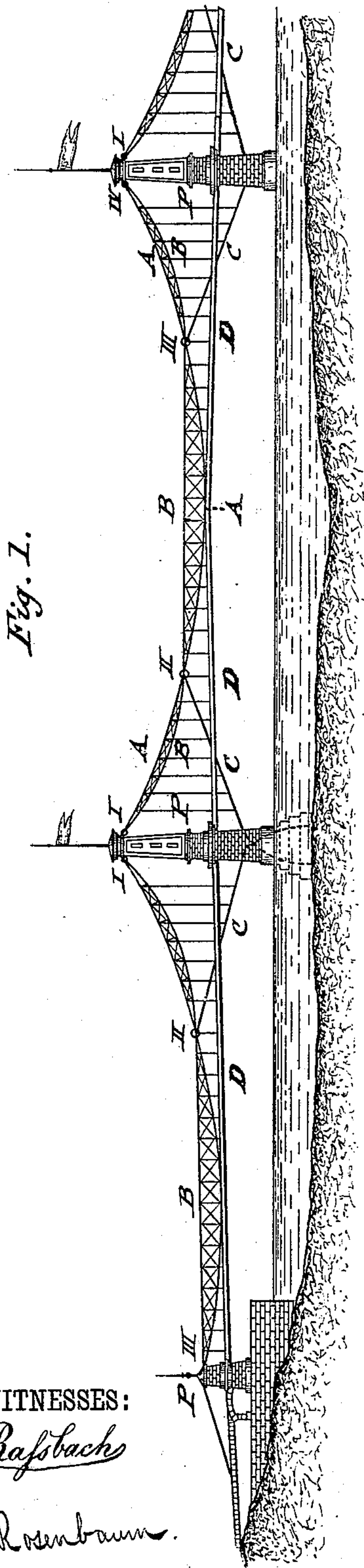


Fig. 1.

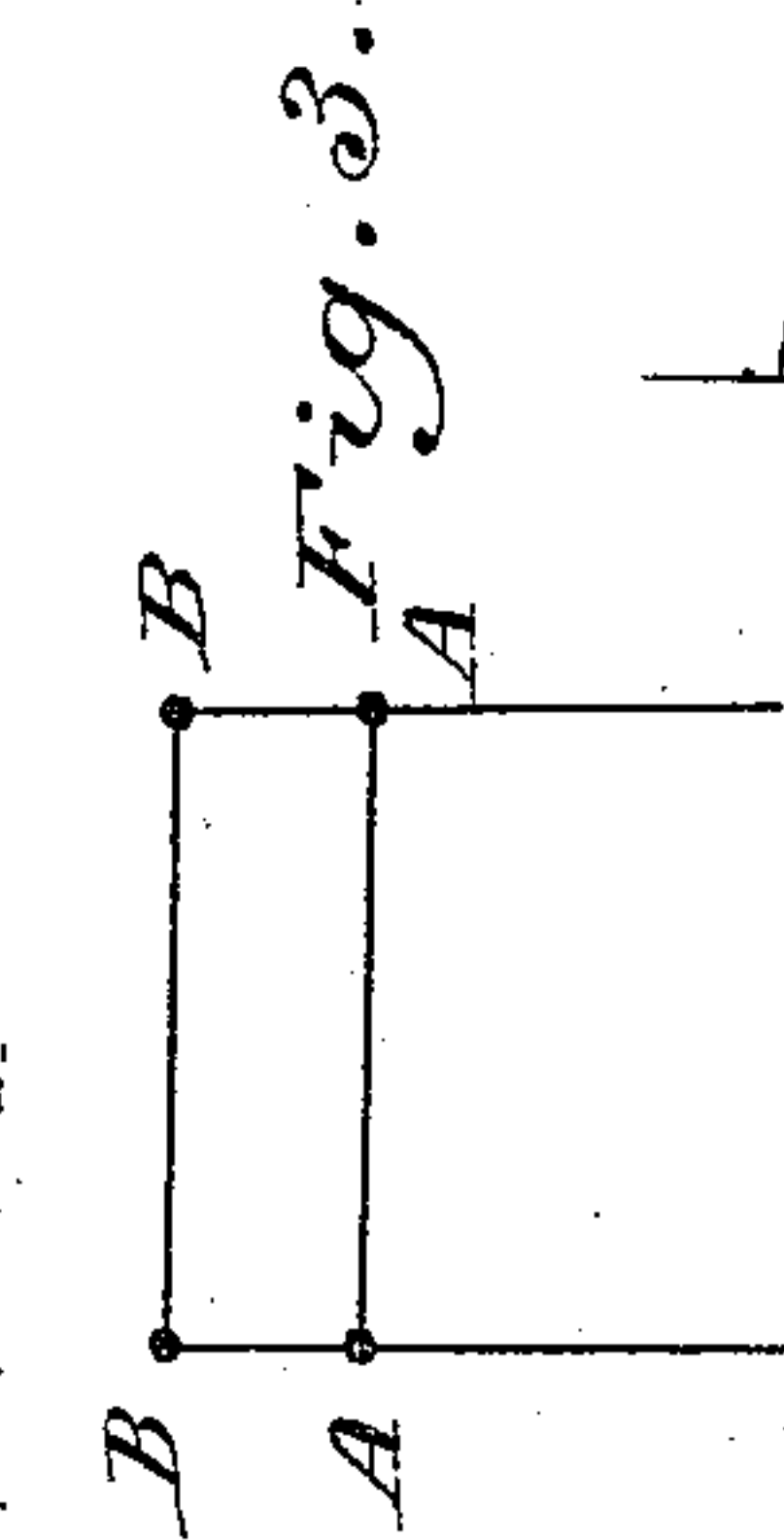


Fig. 3.

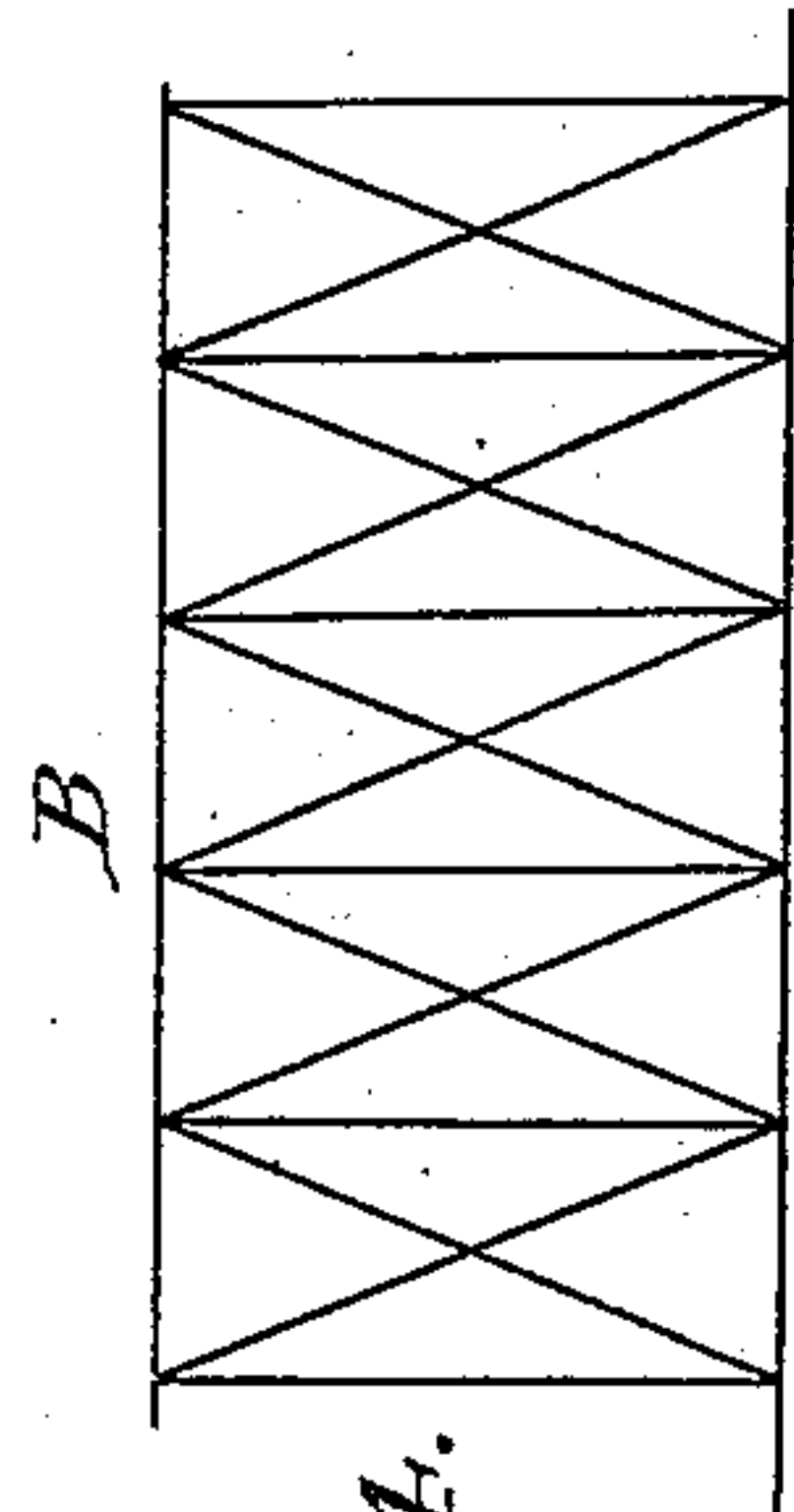


Fig. 4.

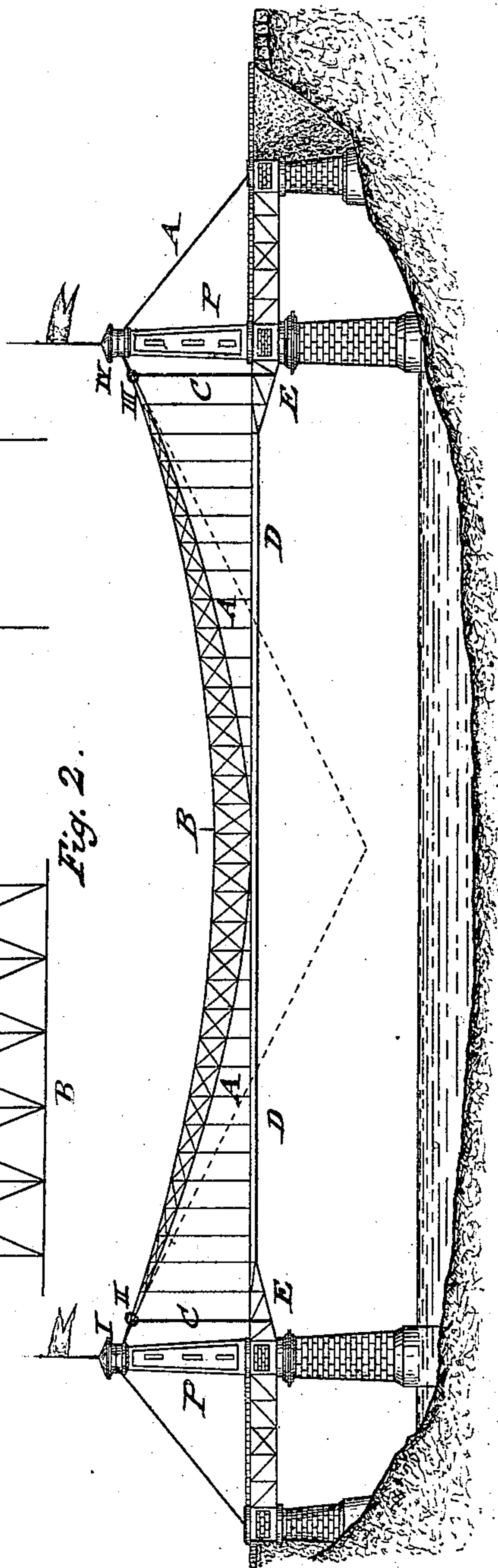


Fig. 2.

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SUSPENSION-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 297,479, dated April 22, 1884.

Application filed August 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV WEGNER, of Berlin, Prussia, in the Empire of Germany, have invented certain new and useful Improvements in Suspension-Bridges, of which the following is a specification.

The object of this invention is to provide a suspension-bridge in which the undulations incident to bridges of this character are avoided and a high degree of stability obtained.

The invention consists, principally, in the combination of a main suspension-chain, a secondary suspension-chain, intermediate joints connecting said chains between their pier-connections, and stays extending from said joints to the piers.

In the accompanying drawings, Figure 1 represents a side elevation of this improved suspension-bridge. Fig. 2 is also a side elevation of the same, the intermediate joints between the piers being shown as located nearer the piers than in Fig. 1. Fig. 3 is a detail vertical transverse section of the transverse and wind bracings of the suspension-chains. Fig. 4 is a top view of said transverse bracings.

Similar letters of reference indicate corresponding parts.

The main suspension-chain A is supported on the piers, in the usual manner, by saddles or other suitable supports, the chain being connected to said supports by joints I and IV, one at each point of connection with the saddle. The secondary suspension-chain B is also jointed to the saddles or pier-supports, and connected with the main chain by intermediate joints, II and III. In Fig. 1 the intermediate connecting-joints between the chains are located at considerable distance from the piers, and the main and secondary suspension-chains cross each other at these points, the main chain being above the secondary chain between the piers and said intermediate joints, and the secondary chain being above the main chain in the central portion of the span between said joints. In Fig. 2 the intermediate joints are located near the piers, and there is no crossing of the chains. The two chains A and B are connected between the joints by proper bearings. The

main and secondary chains form a rib, and there should be two or more ribs in each span, as required by the strength and width of the bridge.

To secure the proper stability of the entire rib, it is stiffened by stays C, which extend from the intermediate joints, II and III, of the arches between the piers to suitable anchorages in the base of the piers, as shown in Fig. 1, or to bracket-shaped extensions E of the girders of the said spans, as shown in Fig. 2. In the latter case the efficiency of the stays C is assisted by the adjoining vertical ties. The arches of the bridge are laterally stiffened by transverse and wind bracings, the latter extending throughout the span without interruption, even at the joints, thereby imparting a lateral stiffness not heretofore attained in suspension-bridges. The roadway D is suspended, in the usual manner, by vertical rods from the main suspension-chain A. Under the moving load the secondary chain B will undergo relaxation of tension in certain parts of its length. In the construction shown in Fig. 1 this will be the case in the central section of the main span, and in the outermost section of the side spans, while in the construction shown in Fig. 2 the relaxation of tension will take place in the central span.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a suspension-bridge, the combination, substantially as set forth, of a main suspension-chain, a secondary suspension-chain, intermediate joints connecting said chains between their pier-supports, and stays extending from said joints to the piers.

2. In a suspension-bridge, the combination, substantially as set forth, of a main suspension-chain, a secondary suspension-chain, intermediate joints connecting said chains between their pier-supports, braces connecting said chains between said intermediate joints, and stays extending from said joints to the piers.

3. In a suspension-bridge, the combination, substantially as set forth, with ribs composed of a main suspension-chain, a secondary suspension-chain, intermediate joints connecting said chains between their pier-supports, and

bracings between said chains, of transverse and wind bracings between such ribs.

4. In a suspension-bridge, the combination, substantially as set forth, with ribs composed
5 of a main suspension-chain, a secondary suspension-chain, intermediate joints connecting said chains between their pier-supports, and
bracings between said chains, of transverse and wind bracings between the ribs, and stays
10 extending from said joints to the piers.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GUSTAV WEGNER.

Witnesses:

PAUL GOEPEL,
SIDNEY MANN.