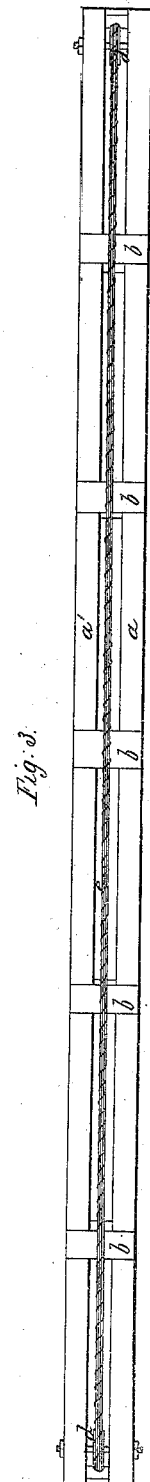
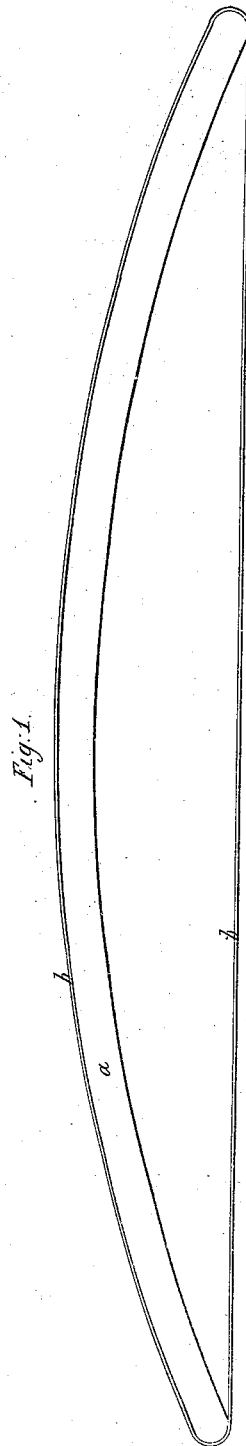
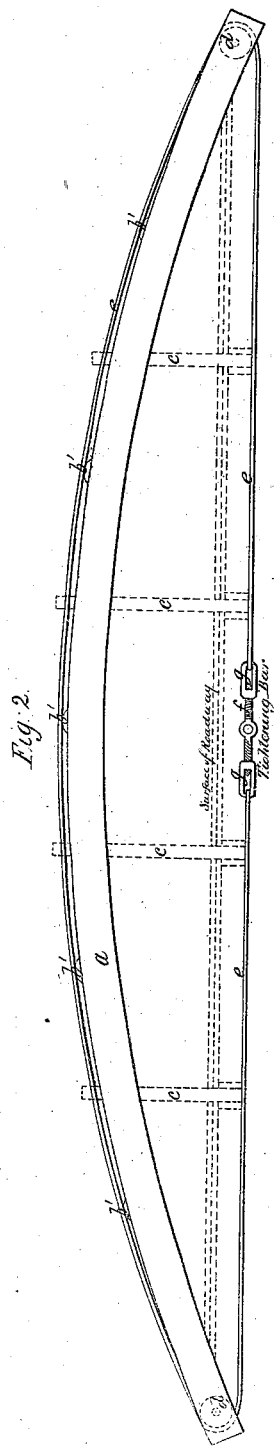


N^o 7,374

J. Bevan.
Girder for Bridges.

Patented May 21, 1850.



UNITED STATES PATENT OFFICE.

JNO. BEVAN, OF NEW YORK, N. Y.

ARCHED GIRDER.

Specification of Letters Patent No. 7,374, dated May 21, 1850.

To all whom it may concern:

Be it known that I, JOHN BEVAN, of the city, county, and State of New York, have invented certain new and useful Improvements in the Method of Strengthening Arches and Arched Beams or Guides, and that the following is a full, clear, and exact description of the principle or character which distinguishes my invention from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of my improved arched beam in the simplest form, and Figs. 2 and 3 side elevation and plan of an arched girder embodying all my improvements.

The same letters indicate like parts in all the figures.

The first part of my invention consists in strengthening an arched girder or beam, and distributing the weight applied to or passing over it, by means of a metal strap, chain or wire rope which constitutes the chord and which passes around the ends and over the entire length of the upper surface of the arch, whereby the arch is bound from end to end by the said metal strap, chain or wire rope, to prevent it from spreading lengthwise, any tendency to elongate the line of the chord having the effect to draw the said metal strap, chain or wire rope down onto the upper surface of the arch, and thus to distribute any weight or pressure applied at any one point over the entire line of the arch.

The second part of my invention consists in providing the arched beam or girder with rollers at the ends when this is combined with the metal strap, chain or rope provided with a tightening screw or coupling for the purpose of regulating the length thereof to adapt it to the changes of temperature, and to camber the beam or girder.

In Fig. 1, of the accompanying drawings (a) represents an arched beam or girder and (b) an endless strap or iron which passes over the entire length of the beam or girder around the ends thereof and thence along the chord; the ends of the beam being rounded that the metal strap may be the more readily bent around and slip thereon. The arched beam or girder may be made in

any appropriate way and of any desired proportions and of any suitable material.

In Figs. 2 and 3 which represent a side elevation and plan of an arch, (a, a') represent two arched beams tied together by cross timbers (b) at suitable distances apart, leaving a space between the two. Rollers (d and d') hung on appropriate arbors are placed between the two beams one at each end, and the others distributed at equal distances apart along the entire length. An iron strap or wire rope (e) passes over the rollers (b') around the end rollers (d, d') and then along the line of the chord, and the two ends are united toward the middle of the chord by links (g, g) into the inner ends of which are tapped a right and left handed screw (f,) by the turning of which the iron strap or rope (e) can be drawn tight at pleasure.

The road way may be suspended from the arch, or from the iron strap or rope where it passes over the arch by means of suspension rods (c) as shown in Fig. 2 by dotted lines. And when the suspension rods are hung on the strap or rope, I prefer to provide the upper end of each suspension rod with a roller under which the strap or rope passes.

From the foregoing it will be seen that a weight or pressure applied to the upper surface of the arch will have a tendency to spread and to elongate the chord and to bring a tension not only on that part of the strap, chain or rope along the line of the chord but on the entire length of the strap, chain or rope by reason of its passing around the ends of the arch and over the entire length of the arched surface without being bolted or otherwise secured thereon, and that therefore the arch will be prevented from spreading by the tensile force of the entire strap, chain or rope. And not only this; but the said strap, chain or rope being drawn tight by the tendency of the arch to spread will be forced down with equal force on all parts of the upper surface of the arch over which it passes and with which it is in contact, and thus a weight or pressure applied at any point on the arch will be distributed equally or nearly so over every point of contact.

The principle of my invention it will be seen is applicable to all kinds of arches or

arched beams or girders of whatever construction which will admit of being bound together from end to end in the manner substantially as above described.

5 What I claim as my invention and desire to secure by Letters Patent is:—

10 1. The method substantially as above described of strengthening arches by means of metal straps, chains or ropes which constitute the chords and pass around the ends and over the arched surfaces thereof without being attached thereto, substantially in the manner and for the purpose specified.

2. And I also claim providing the arch or beam with rollers at the ends around which the strap, chain or rope passes, substantially as described, when this is combined with a coupling and tightening screw for varying the length of the said strap, chain or rope, substantially in the manner and for the 20 purpose specified.

JOHN BEVAN.

Witnesses:

ALEX. PORTER BROWNE,
ROBERT W. LOWBIN.