P. JARVIS
Bridge.

No. 212,941 Patented Mar. 4, 1879.

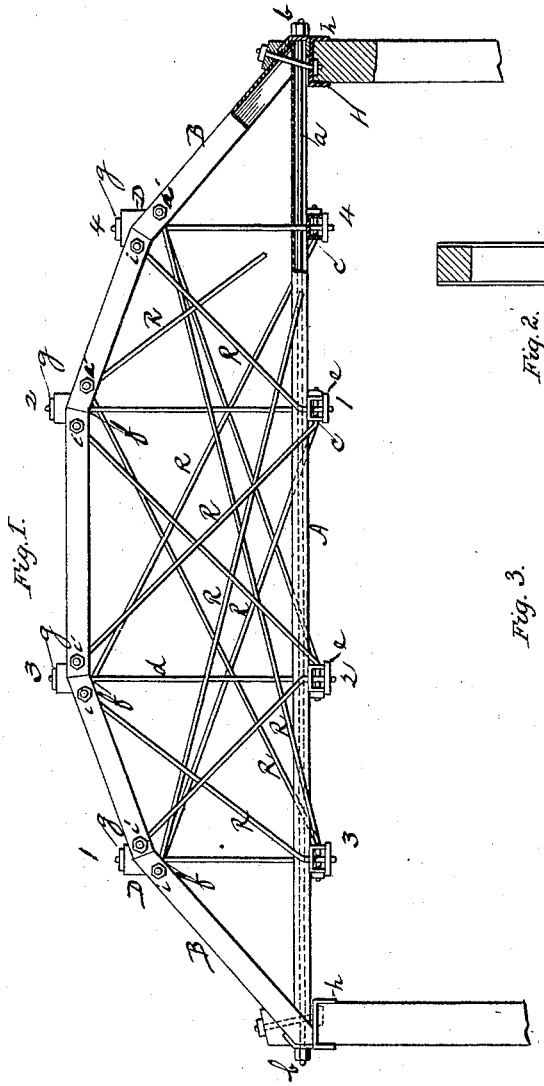

Fig. 1.

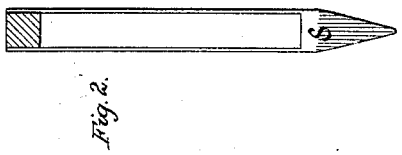

Fig. 2.

Fig. 3.

Witnesses:
Clarence Poole
R. K. Evans

Inventor:
Philip Jarvis
by A. H. Evans & Co
Attys

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PHILIP JARVIS, OF MOUNT AYR, IOWA.

IMPROVEMENT IN BRIDGES.

Specification forming part of Letters Patent No. **212,941**, dated March 4, 1879; application filed October 29, 1878.

To all whom it may concern:

Be it known that I, PHILIP JARVIS, of Mount Ayr, in the county of Ringgold and State of Iowa, have invented certain Improvements in Bridges; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation, having portions cut away to show the structure. Fig. 2 is a view of the pile, made of cast metal. Fig. 3 is a cross-section of same, showing wooden plug.

The object of my invention is to provide a bridge of superior strength; and it consists in a series of tie-rods or suspension-rods connecting the ends of each of the cross-beams, with various points of the suspending arch, as hereinafter more fully described.

In order that those skilled in the art may make and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the stretchers, made hollow, and containing the tension-rod *a*, which passes through the ends of the arch B, and is held by nuts *b b*. At proper distances along the stretchers are the cross-beams C C, provided at each end with a vertical suspension-rod, *d*, which is secured beneath the beam by a nut, *e*, and passing through the stretcher to the arch at *f*, where it pierces the arch, and then, passing through a protecting-cap, D, conforming in outline to the arch, it is secured by a nut, *g*. In the arch and on each side of the point where the rod *d* passes through it are two transverse bolts, *i i'*, having heads and nuts to keep them in place. For convenience of description I will call the points where the vertical rods *d* pass through the arch Nos. 1, 2, 3, and 4, and the cross-beams 1 2 3 4, in different rotation. Besides the support of tie or suspension rods *d*, I give each end of a cross-beam a support by passing a tie-rod, R, from its end to each point where rods *d* pass through the arch, and fasten the ends to the transverse bolts *i i'*. This distributes any load for the moment on any one cross-beam to numerous points of the arch. This cross-beam 4 is supported by rods to points 1, 2, 3, and 4 on the arch, thereby distributing the resistance throughout the arch. So it is in the instance of each beam. They have rods passing from their ends to the arch at or near each point where a vertical suspension-rod reaches the arch.

I fit over the ends of the piles, to protect them from the weather, an elongated cap, H, provided with flanges *h*, which lap over the ends of the pile, and also over the cross-beam which connects the two piles, thereby protecting the ends of the piles and the cross-beam from the effects of weather.

The piles to support this bridge may be cast of metal, having their points solid, as seen at S, and their bodies hollow, but filled with a wooden plug, *y*, to give them solidity. They are driven in the ordinary way.

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

The bridge, substantially as described, having the truss formed by passing tie-rods from each end of each cross-beam to the points on the arch where the vertical suspension-rods are attached.

PHILIP JARVIS.

Witnesses:
HENRY TODD,
WILLIAM MILLS.