A. BONZANO.

Connections for Suspension-Rods of Iron Truss-Bridges.

No. 146,425. Patented Jan. 13, 1874.

FIG. 1

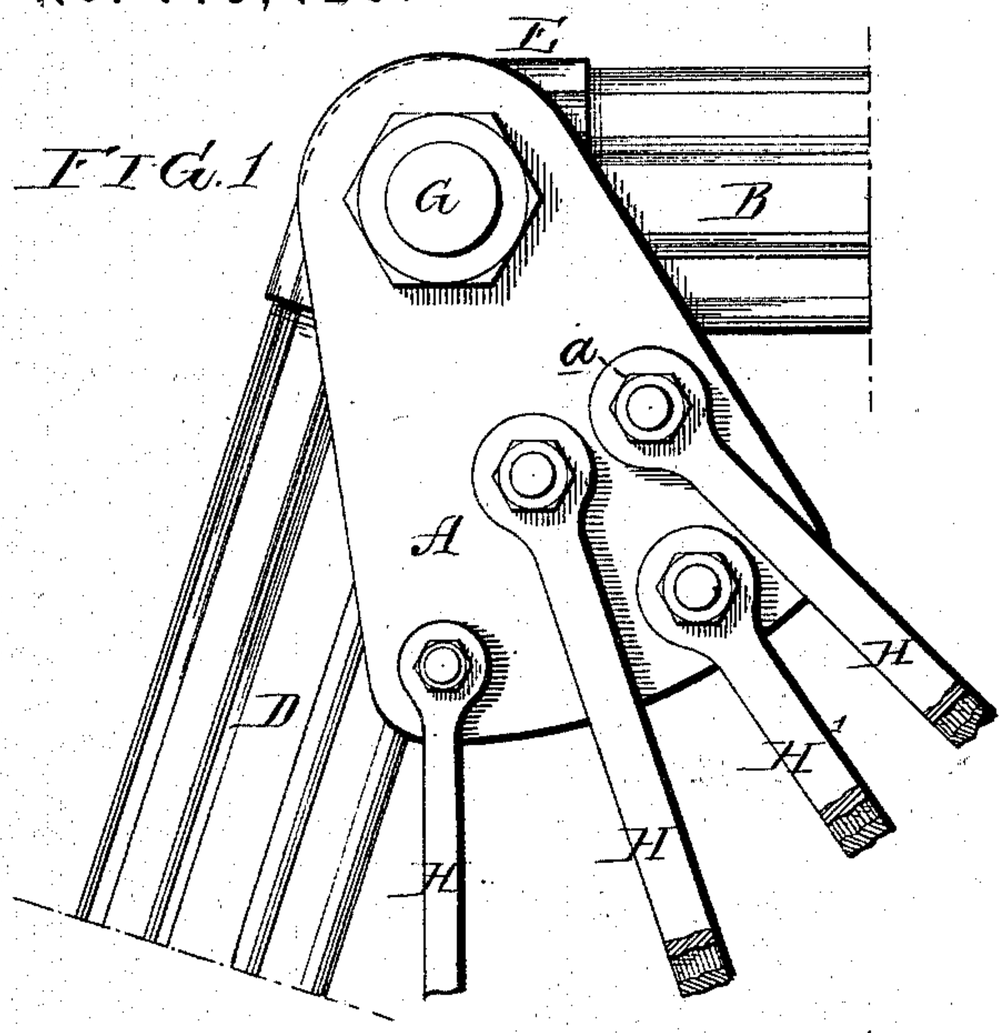


FIG. 2.

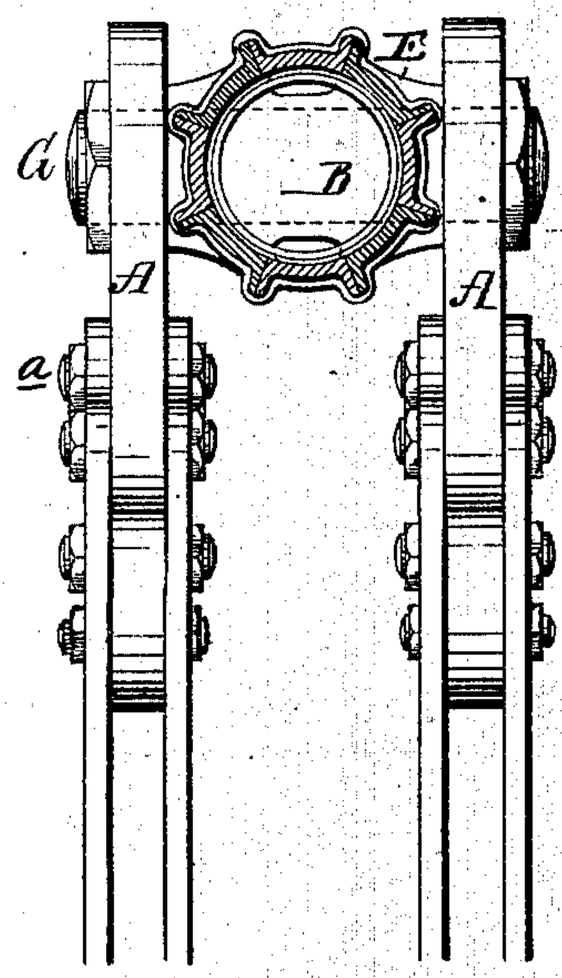


FIG. 5.

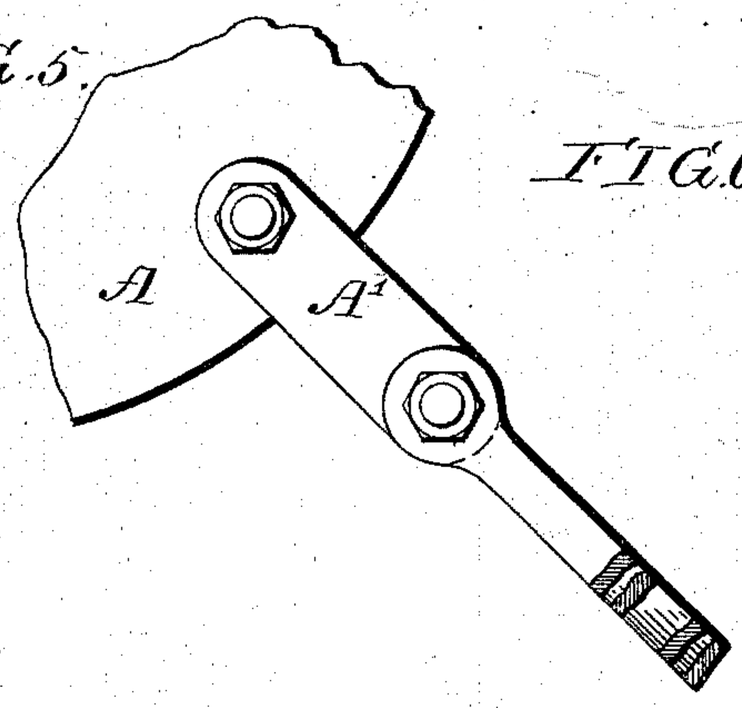


FIG. 6.

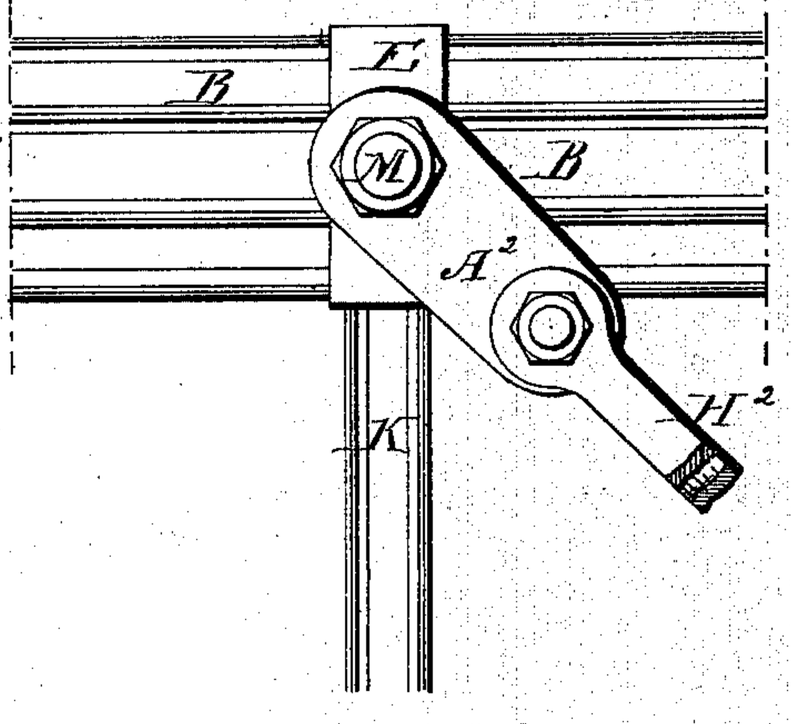


FIG. 3.

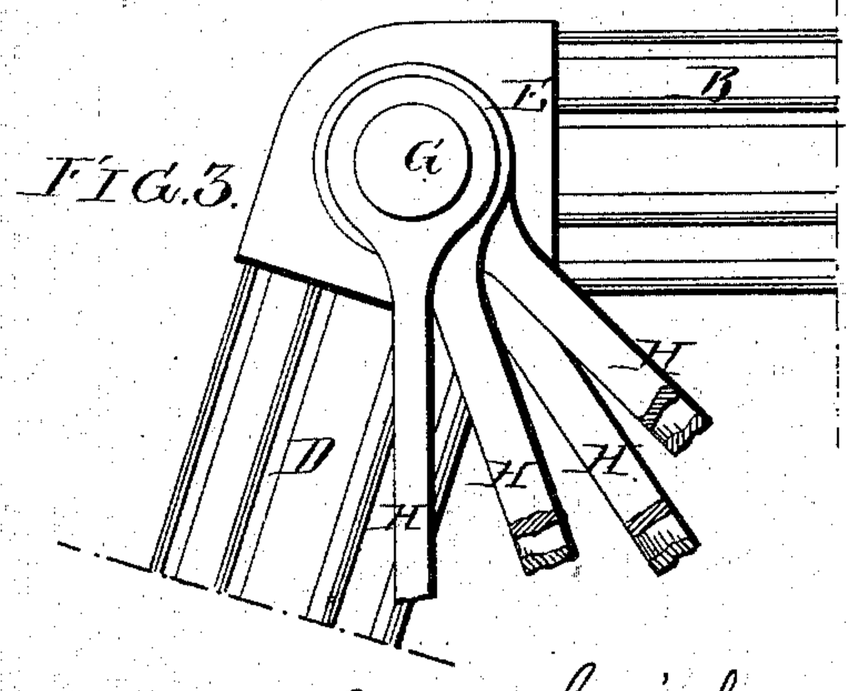
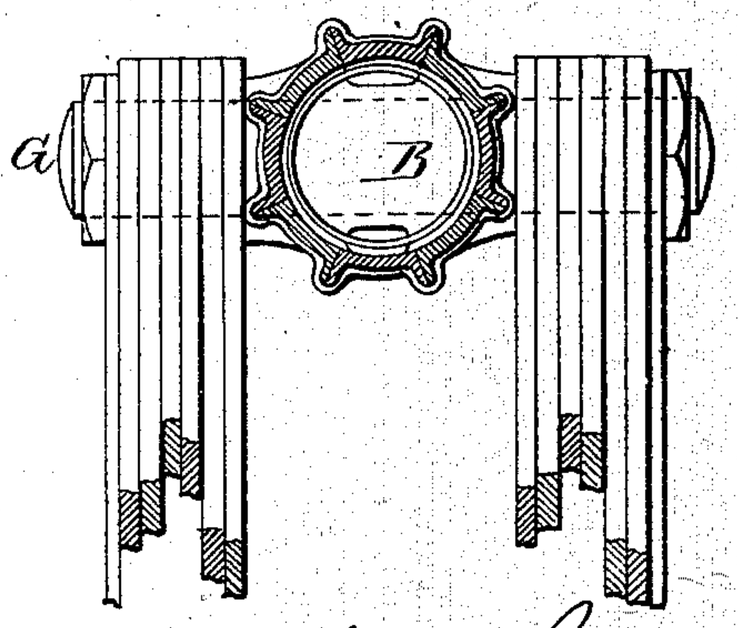


FIG. 4.



Witnesses, Harry Smith
Thomas McSloan

Adolphus Bonzano
by his Attys
Howson and Son

UNITED STATES PATENT OFFICE.

ADOLPHUS BONZANO, OF PHŒNIXVILLE, ASSIGNOR TO HIMSELF, THOMAS C. CLARKE, OF PHILADELPHIA, JOHN GRIFFEN AND DAVID REEVES, OF PHŒNIXVILLE, PENNSYLVANIA.

IMPROVEMENT IN CONNECTIONS FOR SUSPENSION-RODS OF IRON TRUSS-BRIDGES.

Specification forming part of Letters Patent No. **146,425**, dated January 13, 1874; application filed December 16, 1873.

To all whom it may concern:

Be it known that I, ADOLPHUS BONZANO, of Phœnixville, Pennsylvania, have invented Improvements in Connecting Suspension-Rods to the Chords of Truss-Frame Bridges, of which the following is a specification:

The object of my invention is the substantial and economical connection of suspension-rods to the upper chords of truss-frame bridges through the medium of plates or links A. (Shown in the side view, Figure 1, and sectional view, Fig. 2, of the accompanying drawing.)

The character and advantages of my invention can be best explained by comparing it with the old plan of connecting suspension-rods to upper chords, as shown in the side view, Fig. 3, and sectional view, Fig. 4, in which B represents part of the tubular upper chord of a bridge, and D part of the end post, both being fitted to the connecting-piece E of cast-iron, through which passes the pin G, for receiving the eyes forged on the end of the suspension-rods H. In a truss-frame bridge of extended span these rods must be both numerous and substantial, the pin G being of proportionate strength, so that the eyes at the end of the rods must necessarily be of large diameter.

It is well known to those engaged in structures of this class, that to make large eyes trustworthy demands elaborate, exact, and costly forged work, to dispense with which is one of the main objects of my invention.

Instead of concentrating all the suspension-rods at the pin G, I fit to the latter two plates or links, A, above referred to, one plate on each side of the connecting-piece E, and to these plates I connect the eyes of all the suspension-rods H, there being in the present instance sixteen rods, four on each side of each plate, one connecting pin or bolt, *a*, serving for the attachment of two rods. These bolts or pins are comparatively small, and the eyes of the suspension-rods are of correspondingly small diameter, and can be forged at much less expense than the larger eyes shown in Fig. 3, while they are much better adapted than the latter for resisting the strains to which they are subjected.

As regards the plates or links themselves, it will scarcely be necessary to remark that the simplest forging work is demanded in manufacturing them.

It will be observed that the eyes of the several suspension-rods are attached to the plates or links at points so far apart from each other that no material weakening of the said plates can result from the holes bored for the reception of the pins *a*.

In some cases it may be desirable to connect more than eight suspension-rods to one of the plates A. This may be accomplished without boring additional holes in the plates by the use of a supplementary link, A^1, Fig. 5, which may be attached to the main link or plate A in place of one of the suspension-rods—the rod H^1, Fig. 1, for instance—and to these supplementary links may be connected the four suspension-rods shown, in which case ten suspension-rods, in place of eight, will be connected to each plate or link A, five on each side; and this employment of supplementary links may be extended, so as to still further increase the number of suspension-rods without boring additional holes in the main plate or link A.

It will be observed, on referring to the sectional view, Fig. 4, which illustrates the usual plan of connecting the suspension-rods to the upper chord, that, although the eyes are crowded together, a considerable length of pin G is required for their reception. The longer this pin is the more substantial it must be to resist the leverage to which it is subjected by the strain of the outer rods, and the more these rods are dispersed over the pin G the more unequal will be the strain which they have to resist, whereas the employment of the links A results in concentrating the resisting medium as close to the upper chords as possible, and within limits which render the resisting medium more effective.

These advantages will be readily understood by comparing my improvement, (shown in Fig. 2) with the old plan. (Illustrated in Fig. 4.)

The same plan of thus concentrating the resisting mediums may be employed at other points in the bridge than where the upper chord is connected to the end posts. In Fig.

6, for instance, where two lengths of chord-tube, B B, and vertical post K join the connecting-piece E, at intermediate points in the truss-frame between the opposite end posts, I connect two links, A^2, one on each side of the connecting-piece, to the transverse pin M, and to each link I connect two suspension-rods, H^2. A much better result is attained by this employment of the links, for the reasons above given, than if all four suspension-rods were connected directly to the pin M.

I claim as my invention—

1. In a truss-frame, the combination, substantially as described, of plates or links A with the upper chord and suspension-rods.

2. The combination, with the upper chord, of plates or links A, any desired number of supplementary links A^1, and the suspension-rods.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADOLPHUS BONZANO.

Witnesses:
P. G. CAREY,
JEROME JOHN.