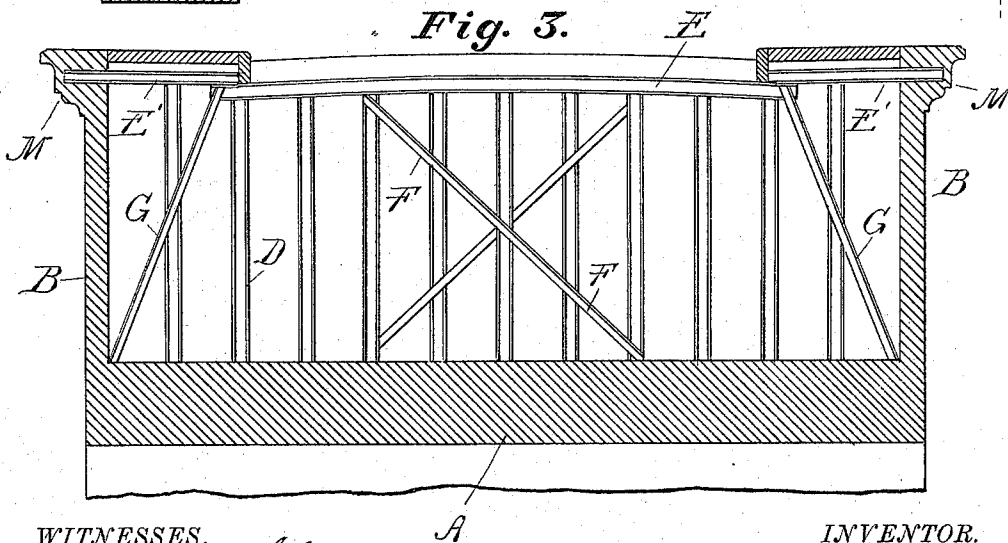
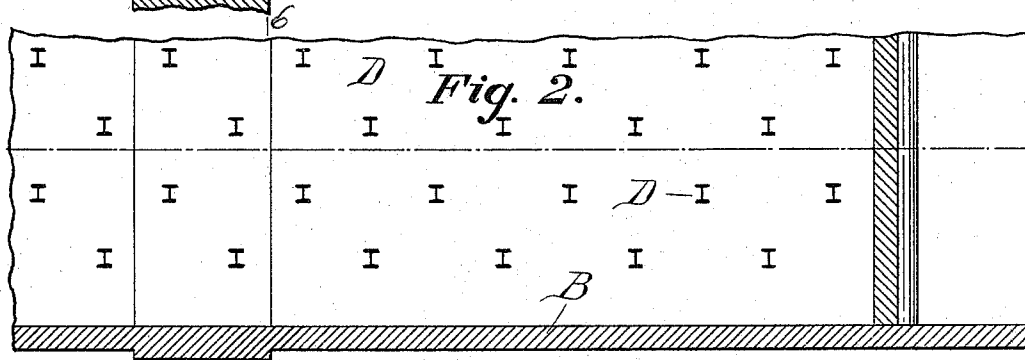
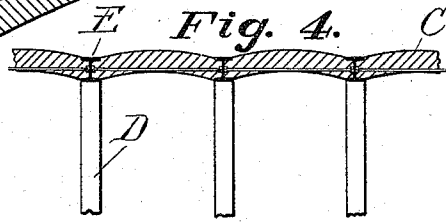
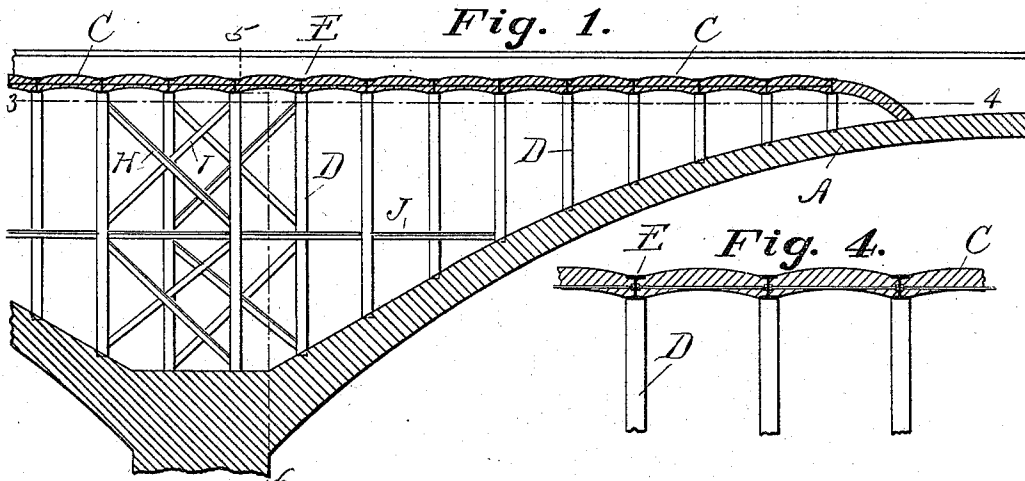


(No Model.)

E. THACHER.
BRIDGE.

No. 570,239.

Patented Oct. 27, 1896.



WITNESSES.

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UNITED STATES PATENT OFFICE.

EDWIN THACHER, OF DETROIT, MICHIGAN.

BRIDGE.

SPECIFICATION forming part of Letters Patent No. 570,239, dated October 27, 1896.

Application filed April 27, 1896. Serial No. 589,256. (No model.)

To all whom it may concern:

Be it known that I, EDWIN THACHER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Bridges, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to improve the construction of masonry bridges; and it consists in the use of posts or bents in the spandrel-spaces in place of earth filling or masonry walls or arches now usually employed, whereby I obtain the following advantages: First, the loads and stresses sustained by the arches, piers, abutments, and foundations are much reduced; second, the spandrel face-walls (if used) are relieved from all thrust or pressure, and hence may be reduced in thickness, thereby reducing weight and cost, and the bents, if braced, will support the spandrel face-walls instead of the walls being required to support the filling, as is usual; third, the arch and spandrel face-walls are open to inspection inside and out, and hence defects can more readily be found and remedied; fourth, the surfaces may be kept dry and outer faces protected from discoloration and blemishes due to earth and moisture; fifth, there is no danger of settling of roadway over spandrel-spaces.

The invention further consists in the peculiar construction, arrangement, and combination of the various parts, as more fully hereinafter described.

In the drawings, Figure 1 is a longitudinal section through the spandrel-space of a bridge, showing my invention. Fig. 2 is a horizontal section on line 3 4, Fig. 1. Fig. 3 is a cross-section on line 5 6. Fig. 4 is a detail longitudinal section showing the small arches or covering for the spandrel-spaces.

A represents the arches of a masonry bridge. By a "masonry" bridge I mean a bridge built of brick, stone, concrete, or concrete with metal embedded therein.

B are the spandrel-walls.

Instead of filling the spandrel-spaces with earth or with masonry walls, I construct on the upper face of the arches a framework,

preferably of metal, and preferably comprising posts D and beams E on top thereof in the form of bents, the posts being staggered to better distribute the load. The bents may be braced, as shown, by braces F or G or in any other manner, or the braces may be omitted altogether if the spandrel face-walls are made sufficiently heavy to hold the posts and beams in position. The bents may be braced together longitudinally, if desired, by braces H and I and struts or ties J or in any other manner, the only requisite being that the posts and beams be held securely in place.

C represents small arches or coverings between the beams E, which beams may be arranged longitudinally, although the transverse arrangement has some advantages.

If the bridge has sidewalks elevated above the level of the roadway, I may employ the beams E', elevated, as shown, by resting on a level with the top of the beams E, their outer ends being supported on the spandrel-walls. These beams E' may also extend into and support the cornice M, which is quite important if the cornice has a large projection. This construction thus allows of a greater projection of cornice with less width of arch than would otherwise be used for a given width of roadway and sidewalk. Manholes (not shown) can be provided for in the pavement or spandrel-space walls, allowing entrance to chambers therein, thus permitting of inspection of any part thereof at any time. There is less liability of the bents and bracing requiring any attention (such as repainting) after they are once erected, as they are securely inclosed and protected from the elements.

What I claim as my invention is—

1. In a bridge, the combination with the piers the masonry arches, and the roadway over the spandrel-spaces, of a structural frame on the piers and the arches supporting such roadway.

2. In a masonry bridge, the combination with piers the arches between and supported by the piers and the roadway over the spandrel-spaces, of the spandrel-walls, and a structural frame or posts above the arches and piers supporting such roadway.

3. In a masonry bridge, the combination with the arches and the roadway over the spandrel-spaces, of the spandrel-walls, posts or bents supporting said roadway, and ties therefrom into the spandrel-walls.

4. In a masonry bridge, the combination with the arches, and the roadway and raised sidewalks over the spandrel-spaces of the supports for the roadway and sidewalks, comprising the beams EE' arranged as described and posts for supporting said beams.

5. In a bridge, the combination of masonry piers and abutments, masonry arches between and supported by said piers, posts or bents on said piers and arches, and a continuous

road-bed over said arches and piers and supported by said posts or bents, substantially as described.

6. In a masonry bridge, the combination with the arches, roadway over the spandrel-spaces, the spandrel-walls and cornices thereon, of the metal viaduct in the spandrel-spaces, and beams extending therefrom into the cornices for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN THACHER.

Witnesses:

O. F. BARTHEL,
JAS. WHITTEMORE.