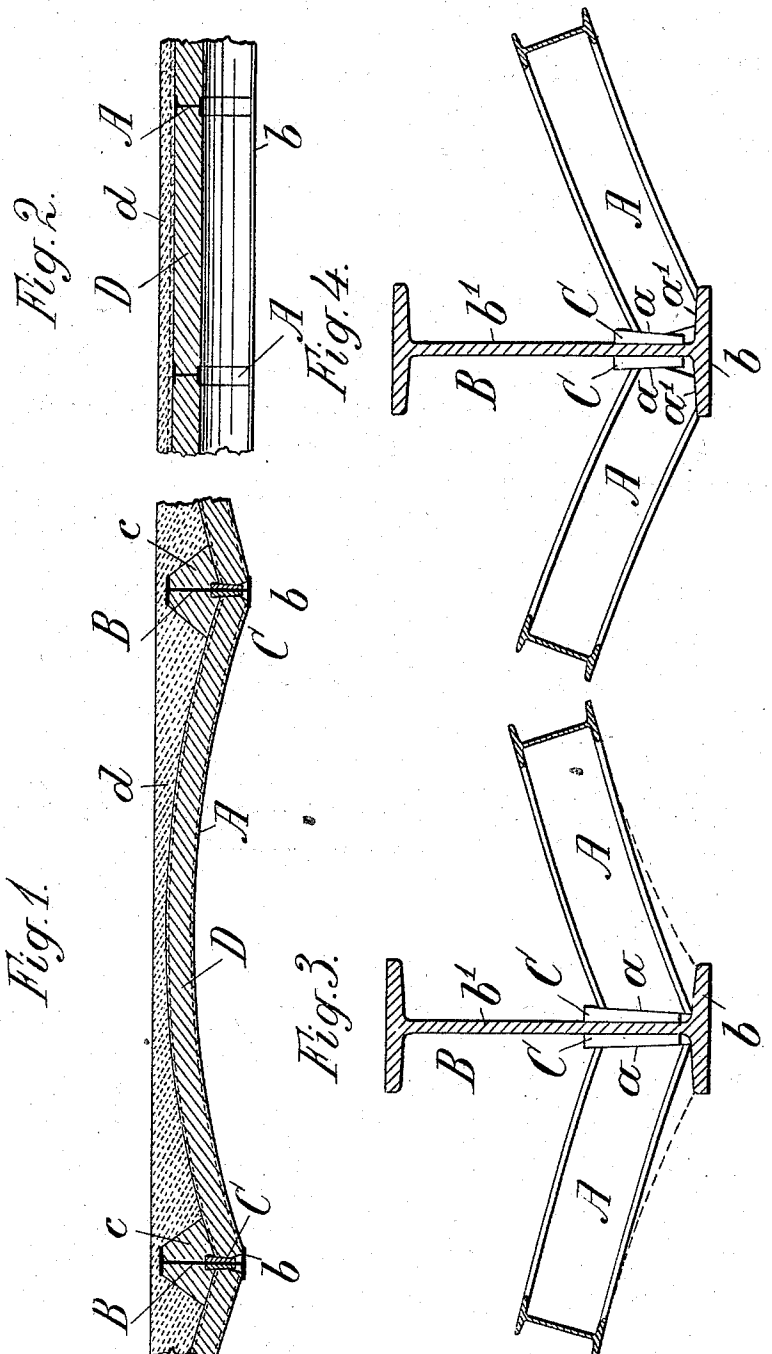


(No Model.)

J. MELAN.
VAULT FOR CEILINGS, BRIDGES, &c.

No. 505,054.

Patented Sept. 12, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH MELAN, OF BRÜNN, AUSTRIA-HUNGARY.

Vault for Ceilings, Bridges, &c.

SPECIFICATION forming part of Letters Patent No. 505,054, dated September 12, 1893.

Application filed May 17, 1893. Serial No. 474,596. (No model.) Patented in Austria-Hungary October 23, 1892, No. 60,937 and No. 44,605.

To all whom it may concern:

Be it known that I, JOSEPH MELAN, professor at the Imperial and Royal Technical High School at Brünn, a subject of the Emperor of Austria-Hungary, residing at Brünn, in the Province of Moravia, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Vaults for Ceilings, Bridges, or Bridge-Roads, (for which Letters Patent of Austria-Hungary have been granted, No. 60,937 and No. 44,605, and dated October 23, 1892;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel construction in fire-proof arches for bridges, viaducts, the ceiling of vaults and the like, the objects being to provide an arch that possesses equal or greater strength than the ones in general use but which will be considerably lighter; to provide an arch having sufficient resistance to support an unequally distributed load without injury, and to provide an arch that can be easily constructed and that will be inexpensive.

The invention consists in the features of construction and combinations of parts hereinafter fully described and specifically claimed.

In the accompanying drawings,—Figure 1 is a transverse section of an arch constructed in accordance with my invention. Fig. 2 is a longitudinal section of the same. Figs. 3 and 4 are fragmentary transverse sections of the ends of the arched ribs and the girders or beams.

Referring now to said drawings B indicates the abutments or longitudinal girders or beams between which the arches are made, conveniently consisting of I-iron, and A the ribs of the arch curved to conform to the intrados of the arch and with it stands flush. These ribs A are made of rolled I or T iron, riveted iron plates, or the like, that is to say these ribs are made of metallic beams that are stiff transversely. For long spans I have found riveted iron plates most advantageous,

but for shorter spans I or T iron can be employed. The ends of the curved ribs are beveled as at *a* in Fig. 3 to fit between the upright portion or web *b'* of the longitudinal beams or girders B, or they can be beveled on two sides as at *a* and *a'* in Fig. 4 to fit against the web *b'* and flange *b* of the longitudinal beams or girders B. The said ribs are located at intervals between the beams or girders and it will be noted that if the ends thereof are fitted nicely a stiff and rigid connection will be made between the ribs and beams or girders, but to insure such rigid connection I prefer to employ wedge plates C that are forced in between the beveled ends *a* of the ribs and the beams or girders, and which serve to hold the ribs rigidly in place in an obvious manner. It is manifest that I can bolt or rivet the ribs and girders if found convenient. After this frame work is constructed the centering is then constructed below the ribs A and a filling D of rammed concrete or the like is built that covers the sides of the ribs and extends between the same. The upwardly projecting portions of beams or girders B are then covered with a coating of rammed concrete, and then a layer *d* of rubble or other light filling material is placed upon the concrete filling, and upon this layer or filling *d* the pavement or flooring can be built.

It will be seen from the foregoing description that the arch or vault can be easily and quickly built with the minimum of labor, as I obviate bolting or riveting, which is a decided improvement as it reduced the cost of construction. And then, further, it makes a lighter vault or arch capable of withstanding great strains. Moreover, the strains to which the concrete vault is subjected are reduced, and notably when the load is unequally distributed upon two adjoining panels, for in this case the strain is borne for the most part by the ribs, thereby increasing the bearing strength of the vault.

I claim as my invention—

1. A vault or arch consisting of abutments, beams or girders, arched ribs rigidly connected with said abutments, beams or girders, and a filling of concrete or the like between said ribs, substantially as described.

2. A vault or arch consisting of abutments,

beams or girders, arched ribs having beveled
ends located between and resting at their
ends upon said abutments, beams or girders,
and a filling of concrete or the like between
5 the said ribs, substantially as described.

3. A vault or arch consisting of abutments,
beams or girders, arched ribs having beveled
ends located between and resting at their
ends upon said abutments, beams or girders,
10 wedge plates between the ends of said ribs

and said beams or girders, and a filling of
concrete or the like between said ribs, sub-
stantially as described.

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

JOSEPH MELAN.

Witnesses:

ALFRED MUSILE,
KRO ATZ.