(No Model.)

J. H. CRUSE.

CONSTRUCTION OF ARCHES, &c.

No. 267,841. Patented Nov. 21, 1882.

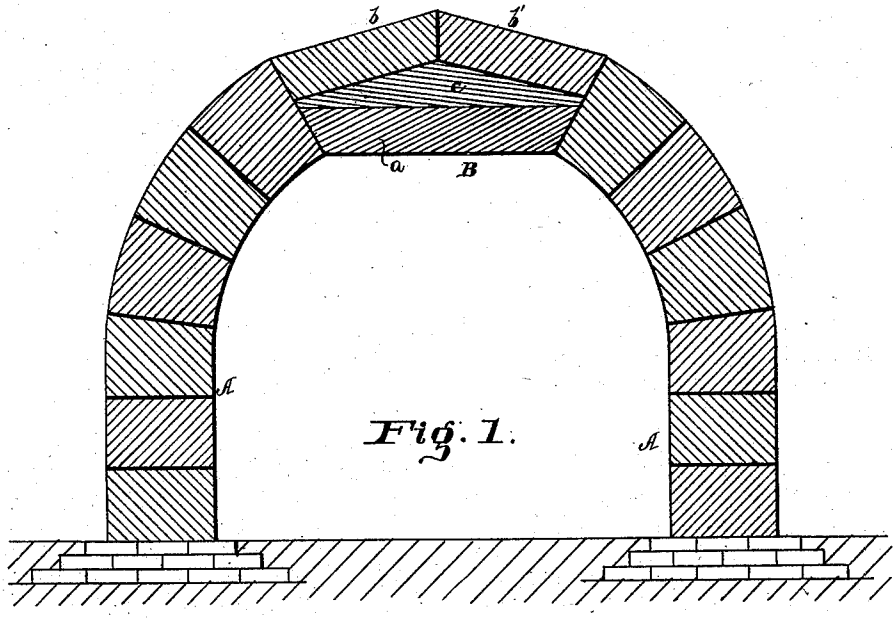


Fig. 1.

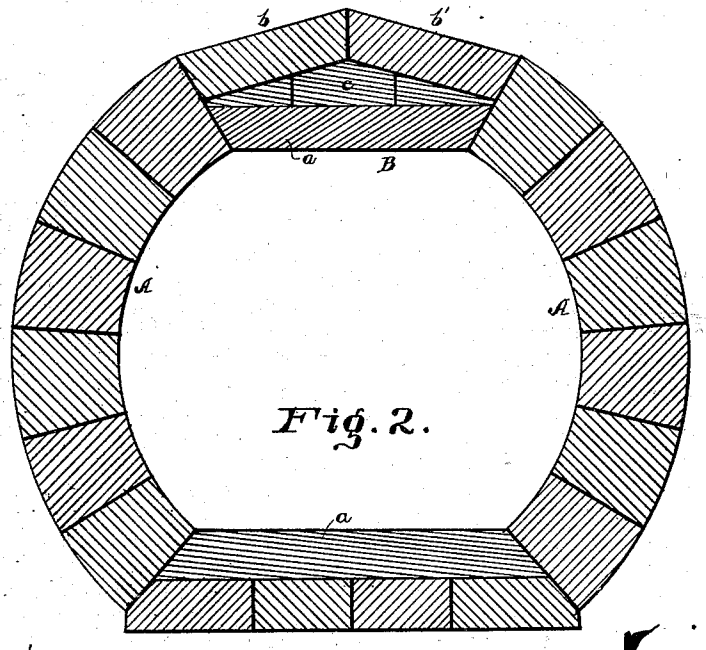


Fig. 2.

Attest:

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UNITED STATES PATENT OFFICE.

JOHN H. CRUSE, OF FELICITY, OHIO.

CONSTRUCTION OF ARCHES, &c.

SPECIFICATION forming part of Letters Patent No. 267,841, dated November 21, 1882.

Application filed March 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. CRUSE, of Felicity, Clermont county, Ohio, have invented certain new and useful Improvements in the Construction of Arches, Culverts, and the like, of which the following is a specification.

In the construction of arches, culverts, and the like it has heretofore been necessary to first construct a frame-work of wood, over which to form the arch and to support it until the mortar has hardened. This frame-work is expensive, and greatly increases the cost of building arches.

The object of my invention is to so form the arch that this frame-work may be dispensed with.

Referring to the drawings forming part of this specification, Figure 1 is a section through a plain arch; and Fig. 2 is a section showing the preferred form of construction for culverts, sewers, &c.

A A represent the walls of arch, which are constructed of brick or blocks of stone of the desired shape. At the top of the arch is placed the compound keystone B, which consists of a lower block, *a*, and the two brace-blocks *b b'*, and an interior block or filling, *c*. This latter portion may be of a single block or of several smaller blocks or concrete, as desired. This keystone, when the arch is complete, occupies a considerable portion of the upper portion of the arch, the size of the keystone varying, however, according to the size of the arch.

The manner of constructing the arch is as follows: The side walls are laid in the usual manner until the arch is to be formed. As soon as the walls begin to arch toward the center a brace is placed against the walls until they have been built to the desired height. While the braces are still against the walls the lower or base plate, *a*, of the keystone is placed in position, and above this is placed the stone or filling *c*, and surmounting this the brace-blocks *b b'*. As soon as these various blocks have been placed in position the braces against the walls may be removed, and the arch firm. In this manner the entire roof of a culvert or tunnel may be constructed without the employment of a frame-work as heretofore employed.

The inner face of the base-blocks *a* may be so shaped, if desired, as to form a continuous curve with the sides, to form a perfect tube, which latter form is preferable in the construction of sewers, &c.

The formation of the keystone above described causes any downward pressure on the brace-blocks *b b'* to be converted to a lateral presssure, thus accomplishing every purpose of a keystone; and its simplicity of construction, and the fact that it renders the usual expensive frame-work unnecessary gives it many advantages over the ordinary form of keystone.

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

1. A keystone for arches consisting of a solid portion and two or more brace-blocks, substantially as described.

2. In the construction of arches or tunnels, the combination of the walls, as A, and a keystone consisting of a base, *a*, and two or more brace-blocks, *b b'*, and the filling *c*, substantially as and for the purposes specified.

JOHN H. CRUSE.

Witnesses:

SAML. F. WATERFIELD,

M. H. TUCKER.