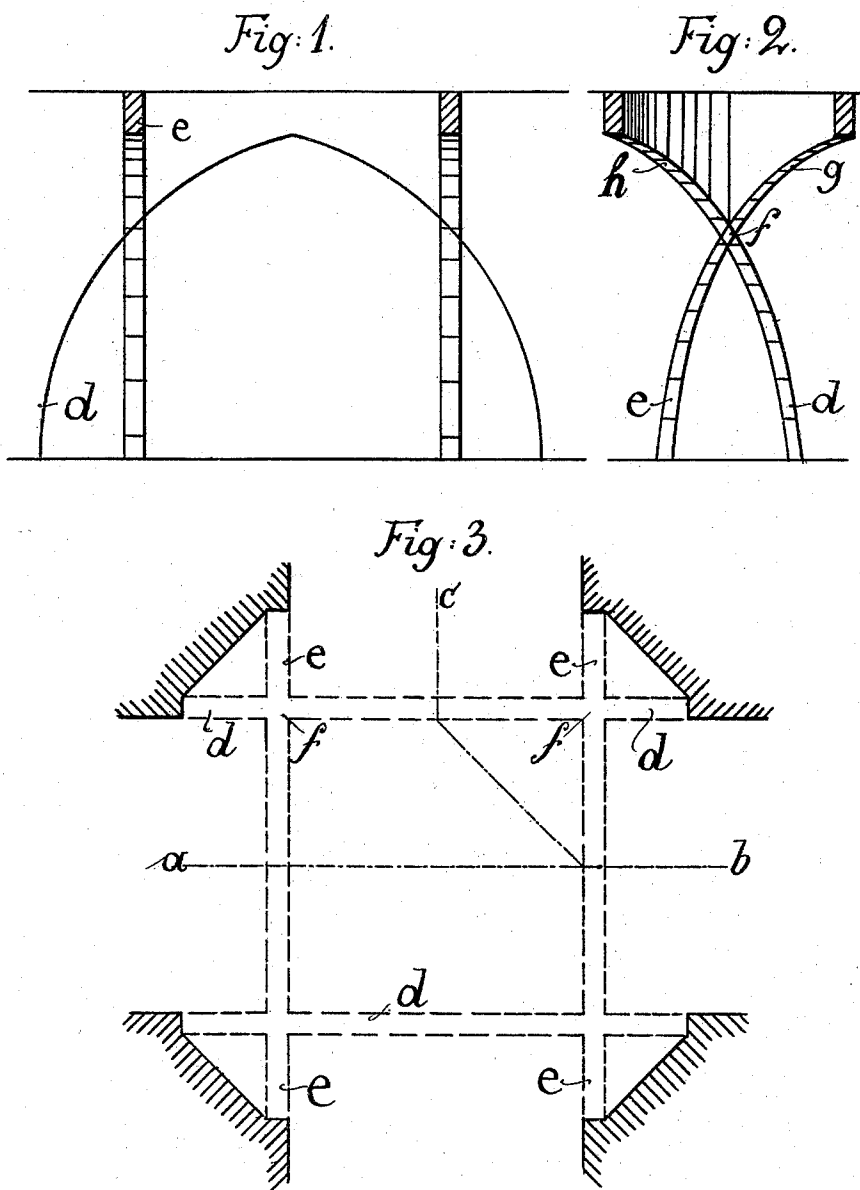


(No Model.)

G. L. MÖCKEL.
ARCH FOR CEILINGS OR VAULTS.

No. 489,654.

Patented Jan. 10, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

GOTTHILF LUDWIG MÖCKEL, OF DOBERAN, GERMANY.

ARCH FOR CEILINGS OR VAULTS.

SPECIFICATION forming part of Letters Patent No. 489,654, dated January 10, 1893.

Application filed May 31, 1892. Serial No. 434,991. (No model.) Patented in Germany June 9, 1891, No. 62,591.

To all whom it may concern:

Be it known that I, GOTTHILF LUDWIG MÖCKEL, a subject of the Grand Duke of Mecklenburg, and a resident of Doberan, in the Grand Duchy of Mecklenburg, in the German Empire, have invented some new and useful Improvements in Arches for Ceilings and Vaults, (for which I obtained a patent in Germany, No. 62,591, dated June 9, 1891,) of which the following is an exact specification.

My invention consists in a novel arrangement of the arches for supporting ceilings and vaults, and the objects of my invention are to construct a vault of wide span and small height without the employment of supports, and thus to afford a saving of material and a construction of greater cheapness than those in use hitherto.

I attain my object by employing arches which spring directly from the foundation intersect at a certain height and are continued upward beyond their lines of intersection, without departing from their original direction and curvature. These arches may be executed in any form desired. The essential point is that two intersecting arches should be continued upward beyond the point of intersection without a deviation from the regular course of the arch.

My invention will be more readily understood by the aid of the accompanying drawings, in which:

Figure 1 is a cross-sectional elevation of a series of supporting arches constructed according to my improved principle, taken on the line *a-b* of Fig. 3. Fig. 2 is another sectional elevation taken on the line *b-c* of Fig. 3. Fig. 3 is a plan of the same.

The construction shown is only an example and shows the application of my principle to a vault or ceiling over a space of octagonal form. In this case I employ two arches *d* and *e* standing at right angles to each other, intersecting at *f*, and continued in the same direction beyond *f* as indicated by *g* and *h*. It will be seen that the arches spring from the ground and that there are no imposts proper. The whole weight of the arches and the super-

structure therefore rests on the foundation, and I thereby secure the advantage, that the whole vault supports itself and that no counter-forts are needed. In consequence thereof and also of the decreased height of the vault, as compared with those of usual construction, this being due to the fact that the arches spring directly from the ground I am enabled to reduce the cost of constructing a vault covering a given area fully by one third.

The construction may be used for vaults over a triangular, quadrangular, or any other polygonal space, and will be found especially convenient for churches, first on account of its cheapness, and then owing to its affording a free space under the whole vault, uninterrupted by supports, so that the pulpit and the altar may be easily seen from any place in the church. The arrangement of the seats may also be easily improved, and the acoustic effect of the vault is an exceedingly good one; moreover the lighting of the church is greatly facilitated. Of course the described arches may be employed to support ceilings as well as vaults.

The manner in which the vault or ceiling proper is constructed on the supporting arches does not concern my invention, and vaults of any usual kind may be built on the said arches, or beams laid on the same as supports for a ceiling.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is:—

In the construction of ceilings and vaults: The arches *d e*, springing from the foundation at different points, intersecting at a certain height, and being both continued upward beyond the point of intersection, for the purpose as described.

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

GOTTHILF LUDWIG MÖCKEL.

Witnesses:

R. HERPICH,
H. ROESLER.