

No. 727,110.

PATENTED MAY 5, 1903.

J. A. DRAKE.
CONSTRUCTION OF ARCHES.
APPLICATION FILED AUG. 4, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

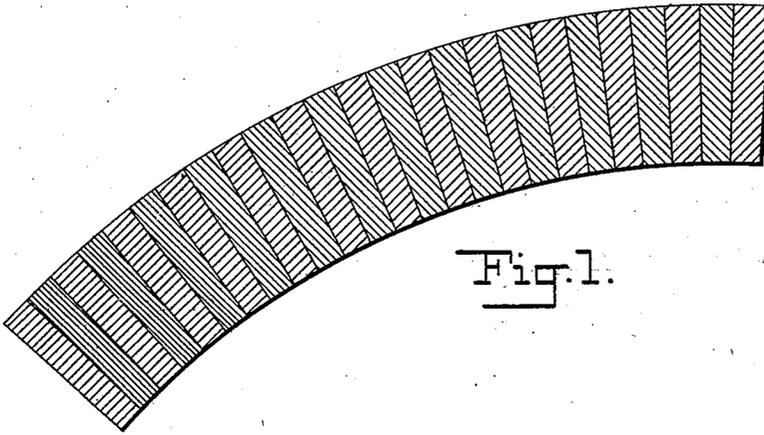


Fig. 1.

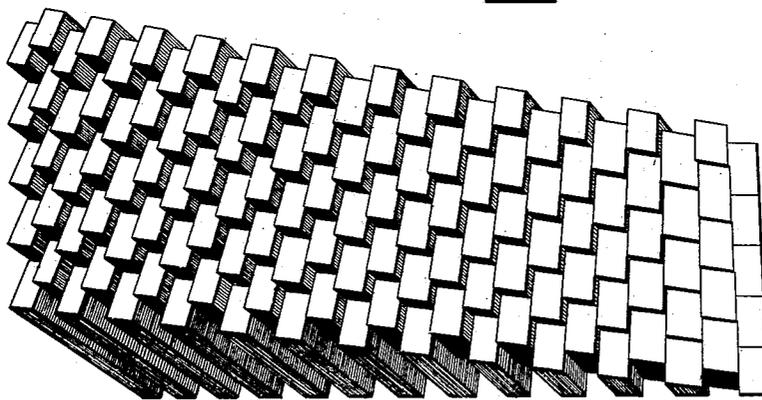


Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

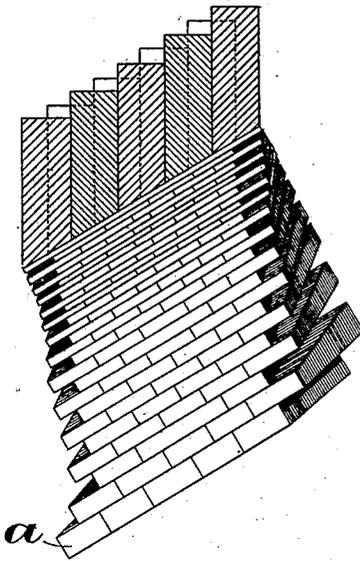


Fig. 3.

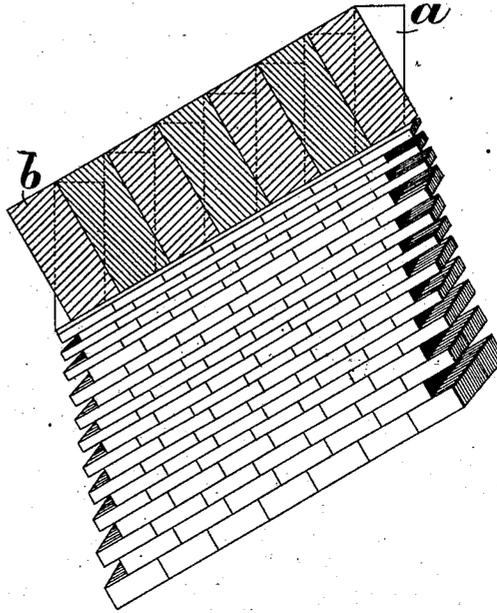


Fig. 5.

Fig. 4.

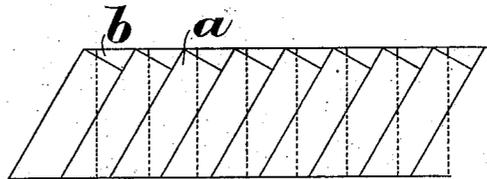
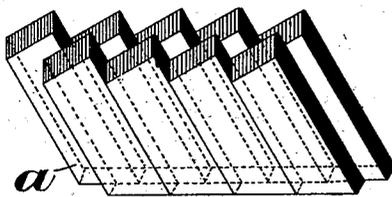


Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN ARMITAGE DRAKE, OF HALIFAX, ENGLAND.

CONSTRUCTION OF ARCHES.

SPECIFICATION forming part of Letters Patent No. 727,110, dated May 5, 1903.

Application filed August 4, 1902. Serial No. 118,308. (No model.)

To all whom it may concern:

Be it known that I, JOHN ARMITAGE DRAKE, residing at Halifax, in the county of York, England, have invented certain new and useful Improvements in the Construction of Arches; 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.

My invention is especially adapted to ovens, kilns, and the like where the crowns of the arches have to be built inclined or at an angle with the base of the oven or kiln; and my said invention consists in the application of end-wedge bricks beveled at one or both ends for building such arches and arched roofs.

The object of my invention is to secure a smooth interior to the arch, while having the cross-joints of the bricks at or near the crown of the arch vertical, as specified by some engineers, and at the same time provide a good footing for the superincumbent backing, and so obviate the tendency to slide; also to avoid a multiplicity of sizes and shapes, which have hitherto been necessary to accomplish this purpose, and at the same time to insure the strength and bond of the arch in its several parts.

According to my invention when commencing to build the arch the spring is prepared at the required angle and the taper arch-bricks, technically known as "end-wedge" bricks, of any suitable length beveled at one or both ends, preferably at the same angle as that at which the arched roof rises. The beveled ends of these arch-bricks are placed linable with the plane of the arch, so that a continuous plane surface on the interior of the arch is formed, the second, third, and successive courses being built over same, the starting-brick being cut or arranged so as to break joint. In building around the arch, from the springer to the crown of the arch, the various courses gradually rise from the angle at the said springer to the vertical position at or near the crown of the arch. This method of construction also insures a smooth interior of arch, no lipping, rabbeting, joggling of joints, or cross-bonds being required. The upper end of the arch-brick is by prefer-

ence left square, so that the break or irregularity may be of use in helping to keep the superincumbent backing or filling in position, and thus to distribute the downward pressure, weight, or thrust by making it more self-sustaining and strong.

In cases where exceptional strength of bond is required the same may be attained by inserting courses occasionally, as desired, of end-wedge arch-bricks with square ends. Such square ends being fixed linable with the plane of the arch, the said square-ended bricks cross diagonally two or more of the beveled bricks, thus giving the required strength of bond.

The finish at the ends of the arch may be accomplished by any of the well-known means, and my invention will readily lend itself to such purpose.

In order that my invention may be more readily understood, I append explanatory drawings, illustrating a method of carrying the invention into practice, wherein—

Figures 1, 2, and 3, show, respectively, transverse section, plan, and longitudinal section of half of an inclined arch built according to my invention. Fig. 4 shows part plan of arch with wedge-shaped bricks beveled at one edge in the position they occupy at the springing line of the arch. Figs. 5 and 6 illustrate the bond formed by the wedge-shaped bricks with square ends in relation to the wedge-shaped bricks having beveled ends.

In building the arch of an inclined kiln or oven the springer is prepared at the required angle in the usual way and the starting-bricks at the ends of the arch cut or otherwise formed to break joint, and the wedge-shaped bevel bricks *a* are laid with the beveled edge parallel with the plane of the arch, as shown in Fig. 4. The next courses are laid so as to bond with the first course, the beveled edge being in every case placed linable with the plane of the arch. Thus it will be seen that as each course is built from the springer the angle with the upright or finished ends of the arch becomes more acute until at or near the center of the arch the cross-joints of the bricks become vertical, thus obtaining the qualification generally desired.

Where additional strength is required in

the arch, the wedge-shaped bevel bricks *a* are built in the manner before mentioned, with the addition of wedge-shaped bricks *b*, having square ends, which square ends 5 being placed linable with the plane of the arch, as shown in Fig. 5, give an extraordinary bond extending over three bricks. These square-ended bricks may be inserted in alternate courses with the beveled bricks or 10 where desired, according to the required strength of arch.

I claim as my invention—

1. An arch involving in its construction a series of similar wedge-shaped bricks having 15 their narrow ends beveled, said bricks being arranged and combined with other bricks to form a continuous and unbroken arched surface, and the axes of the said wedge-shaped

bricks being set at an angle to the axis of the arch, substantially as set forth. 20

2. An arch comprising a series of similar wedge-shaped bricks having their narrow ends beveled, the main portions of the said bricks being set at an angle, and a series of 25 similar wedge-shaped bricks without beveled ends, alternating with the aforesaid series of bricks, and set radially, the narrow ends of all the bricks being arranged to form a continuous and unbroken arched surface, substantially as described and shown. 30

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

JOHN ARMITAGE DRAKE.

Witnesses:

ERNEST P. NEWTON,
LEONARD H. CROSSLEY.