No. 828,752. PATENTED AUG. 14, 1906.

G. E. LADSHAW.

DAM.

APPLICATION FILED FEB. 5, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

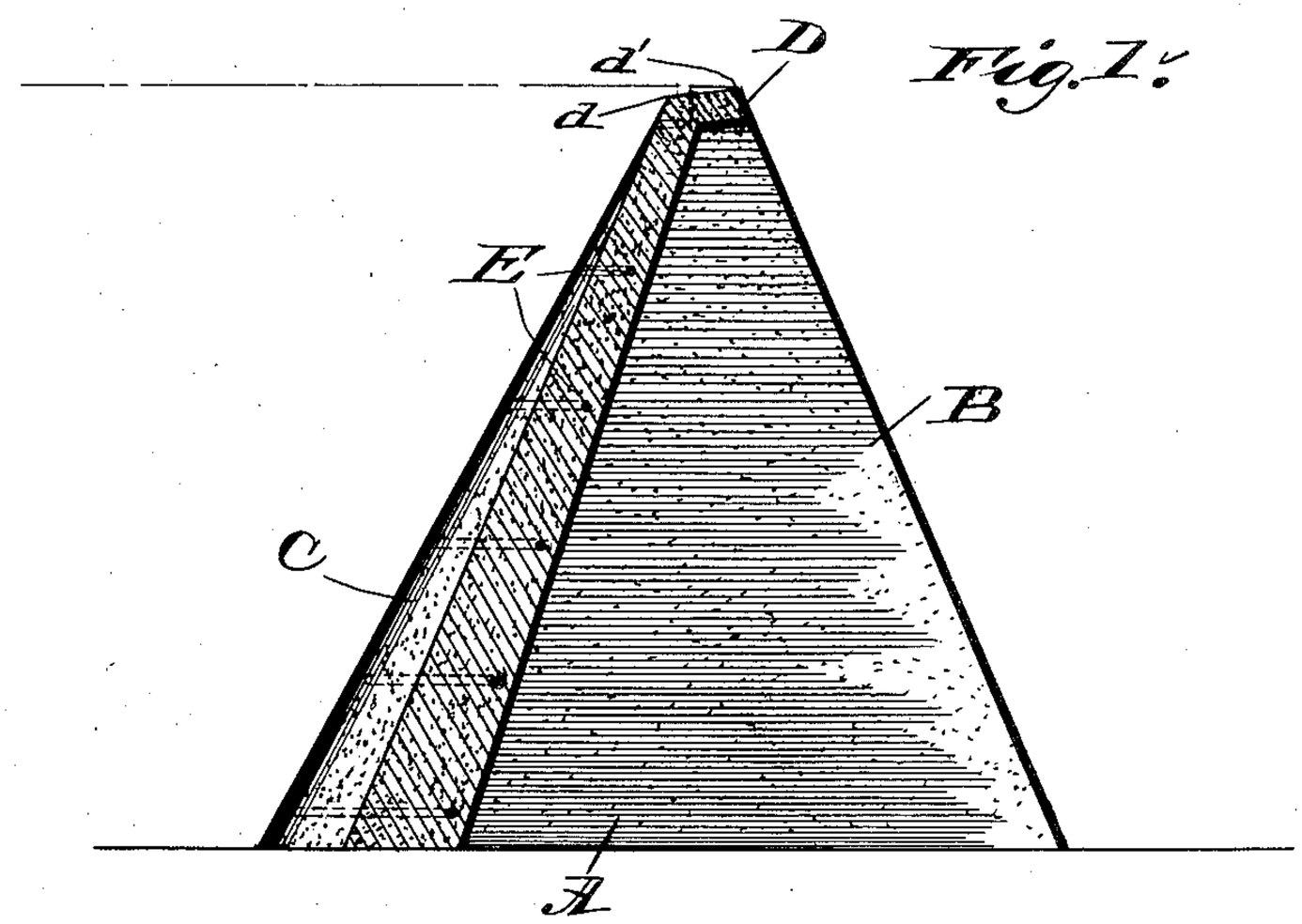
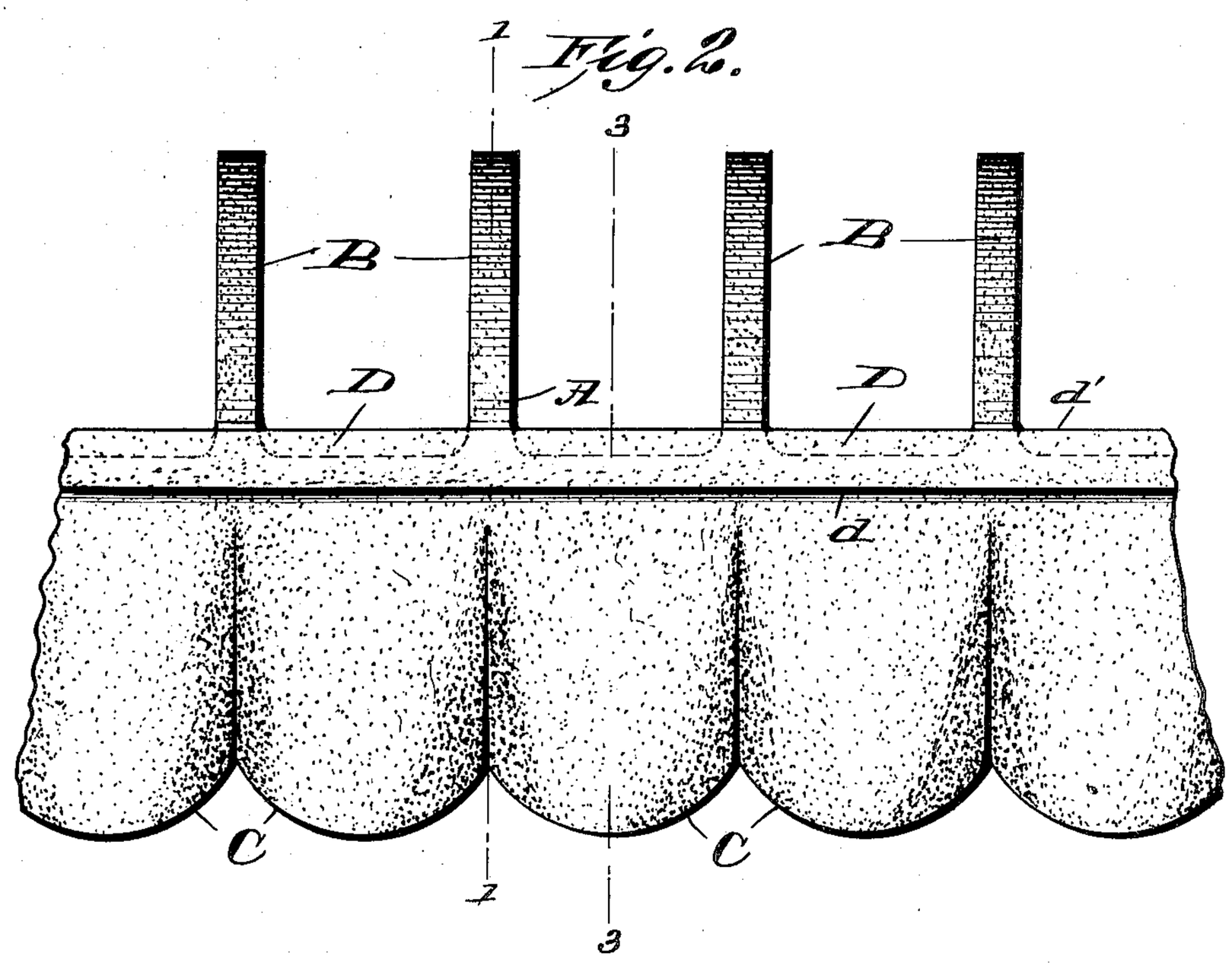


Fig. 2.



WITNESSES:

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C. E. Tainter

INVENTOR

GEORGE E. LADSHAW

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ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 3.

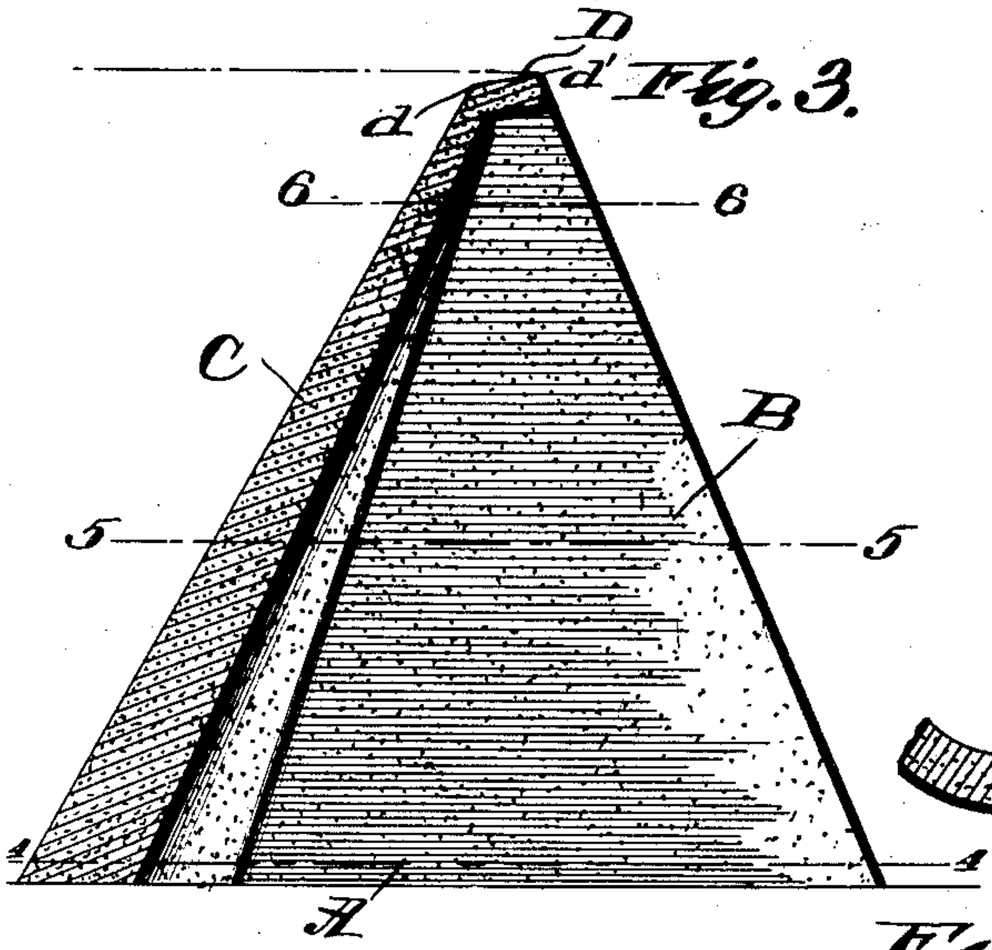


Fig. 4.

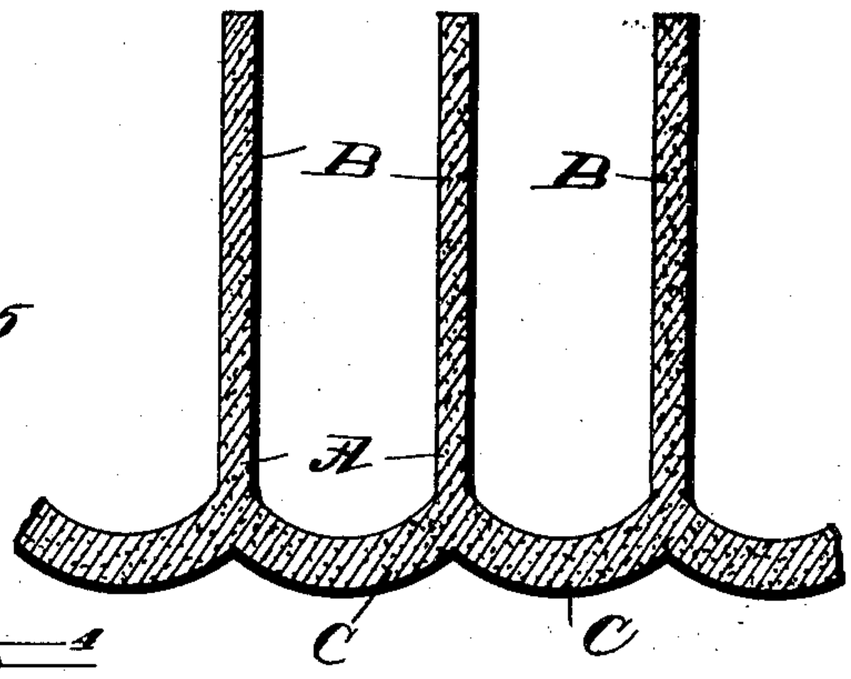


Fig. 5.

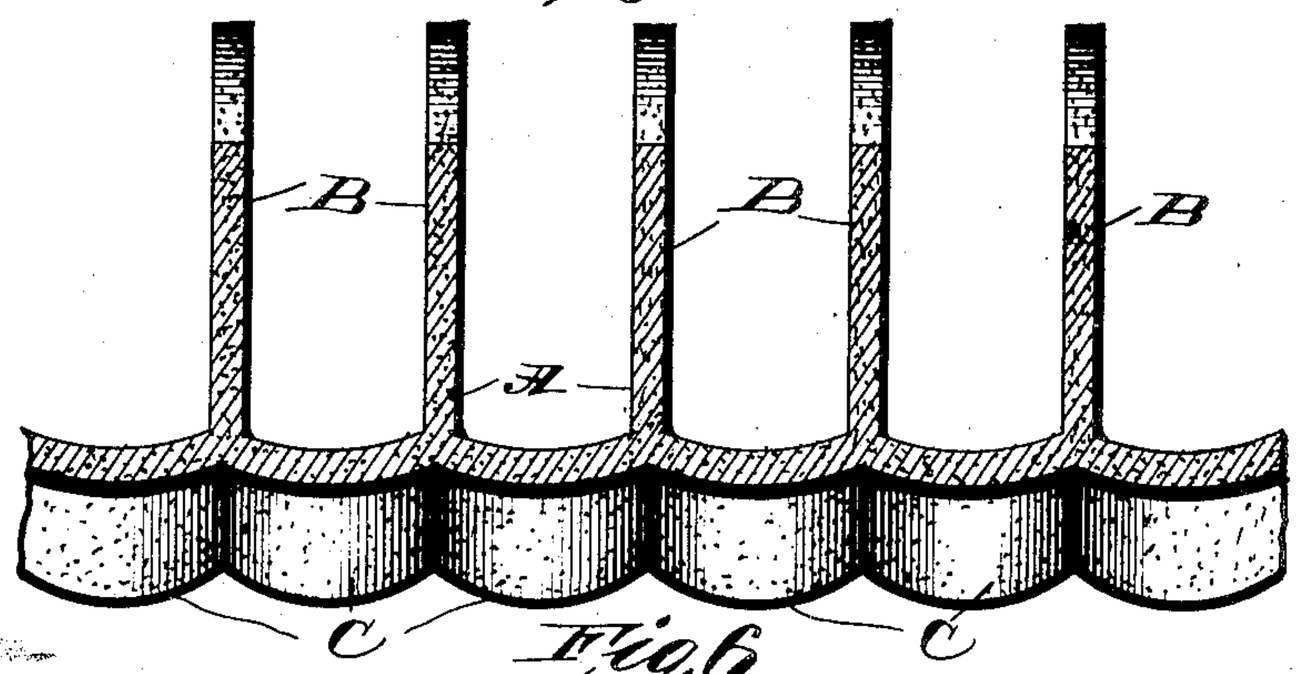
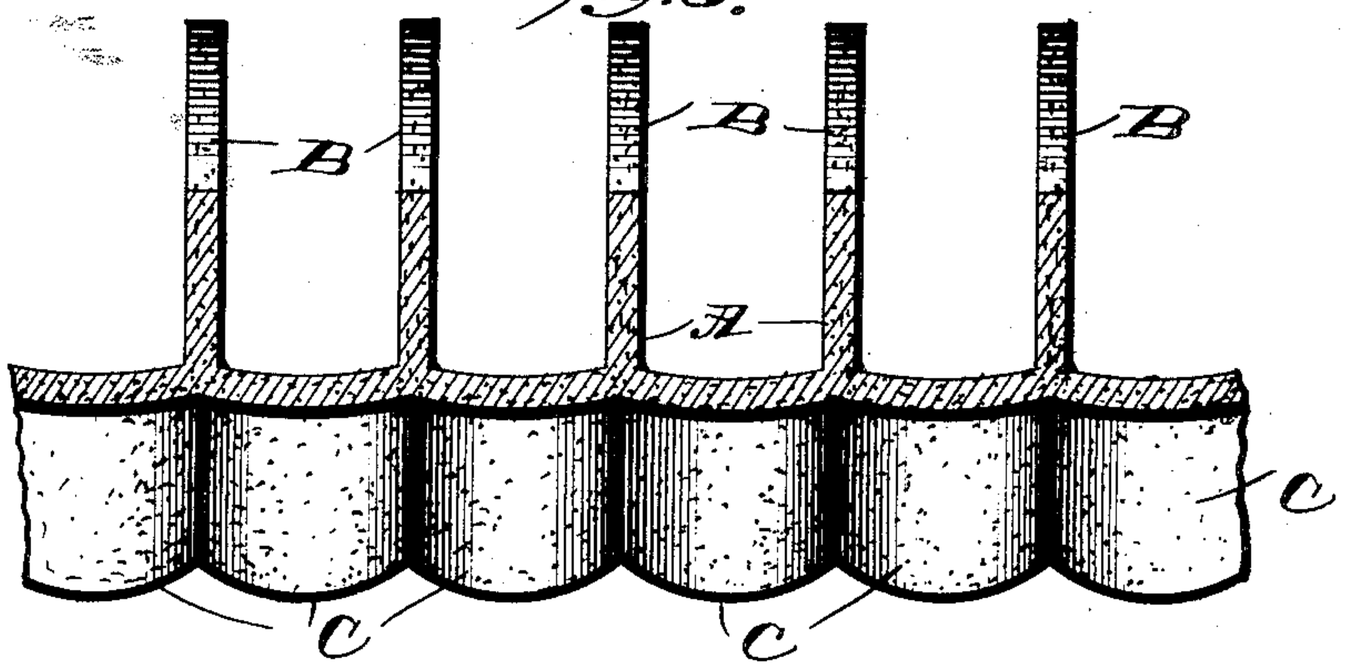


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE E. LADSHAW, OF SPARTANBURG, SOUTH CAROLINA.

DAM.

No. 828,752. Specification of Letters Patent. Patented Aug. 14, 1906.

Application filed February 5, 1906. Serial No. 299,476.

To all whom it may concern:

Be it known that I, GEORGE E. LADSHAW, a citizen of the United States, residing at Spartanburg, in the county of Spartanburg and State of South Carolina, have made certain new and useful Improvements in Dams, of which the following is a specification.

My invention is an improvement in dams; and it consists in certain novel constructions and combinations of parts hereinafter described and claimed.

In the drawings, Figure 1 is a vertical section of my improved dam on the line 1 1 of Fig. 2. Fig. 2 is a plan view of a section of the dam. Fig. 3 is a vertical section on the line 3 3 of Fig. 2. Fig. 4 is a horizontal section on the line 4 4 of Fig. 3. Fig. 5 is a similar section on the line 5 5 of Fig. 3, and Fig. 6 is a similar section on line 6 6 of the same figure.

My improved dam is a unitary structure comprising piers provided with buttresses and connected by arches springing from the piers upon the opposite sides from the buttresses.

In the present embodiment of my invention piers A are arranged at spaced intervals, the piers being provided upon one side with the buttresses B and connected by walls C, the said walls being arched transversely away from the piers and inclined vertically thereto. The arch of the wall decreases from below upward and may be described as being formed in transverse contour upon arcs having radii increasing in length from below upward. The back slope or concave face of the wall may be varied to meet any desired pressure on the arched face of the wall without increasing the amount of material required to withstand a given liquid-pressure. By arranging the arch of the wall toward the retained water and inclining the wall from the retained water toward the pier all tension stresses are eliminated, compression stresses being substituted therefor.

Upon the upper edge of the dam is arranged a coping D, the upper face of the coping being inclined from the horizontal, so that the front edge *d* of the said coping is in a lower plane than the rear edge *d'* thereof—that is, the upper face of the coping is inclined from the horizontal toward the convex face of the wall. This arrangement of coping also eliminates tension stresses, since the force of the water tends to force the coping downward instead of upward.

While I have shown a dam composed of a plurality of arches supported at their abutting ends by buttressed piers, it is evident that the dam might be composed of a single arch with its ends directly supported by abutments.

By arranging the greatest convexity of the walls at the bottom the highest resisting power of the wall is placed in a position where it meets the greatest force of the retained water, and this convexity may be increased or decreased in accordance with the height of the dam.

The inclination of the wall from the retained water eliminates all tension stresses, since no resistance is offered to upward movement of the water, and the tendency of the horizontal thrust of said retained water to overturn the dam is counteracted in part by the downward pressure.

If desired, reinforces E, of steel or other suitable material, may be inserted in the walls of my improved dam.

What I claim is—

1. A dam comprising a unitary structure, composed of spaced buttressed piers, the piers being connected by walls arched transversely away from the buttresses and inclined vertically toward the piers, the arch of the walls decreasing in concavity from below upward, and a coping for the walls, the upper face of the coping being inclined toward the convex face of the walls.

2. A dam comprising spaced piers, connected by walls arched transversely and inclined vertically toward the piers, and a coping for the walls, said coping being inclined from the horizontal toward the convex face of the walls.

3. A dam comprising a unitary structure, composed of a plurality of spaced piers, and arches springing from the buttressed piers on the opposite side from the buttresses, the walls of the arches being inclined toward the buttresses and the convexity of the arches being formed upon the arcs of circles of gradually-increasing radius from below upward.

4. A dam comprising spaced piers con-

nected by arches, the convex face of the arches being toward the retained water, and the transverse contour of the concave face of said arches being formed upon arcs having increasing radii from below upward.

5. A dam comprising spaced piers connected by walls arched transversely, and inclined vertically toward the piers, the concavity of the walls decreasing from below upward.

GEORGE E. LADSHAW.

Witnesses:
GABRIEL CANNON,
C. M. CREWS.