

(No Model.)

W. H. HARRELSON.
CONSTRUCTION OF RETAINING WALLS.

No. 413,718.

Patented Oct. 29, 1889.

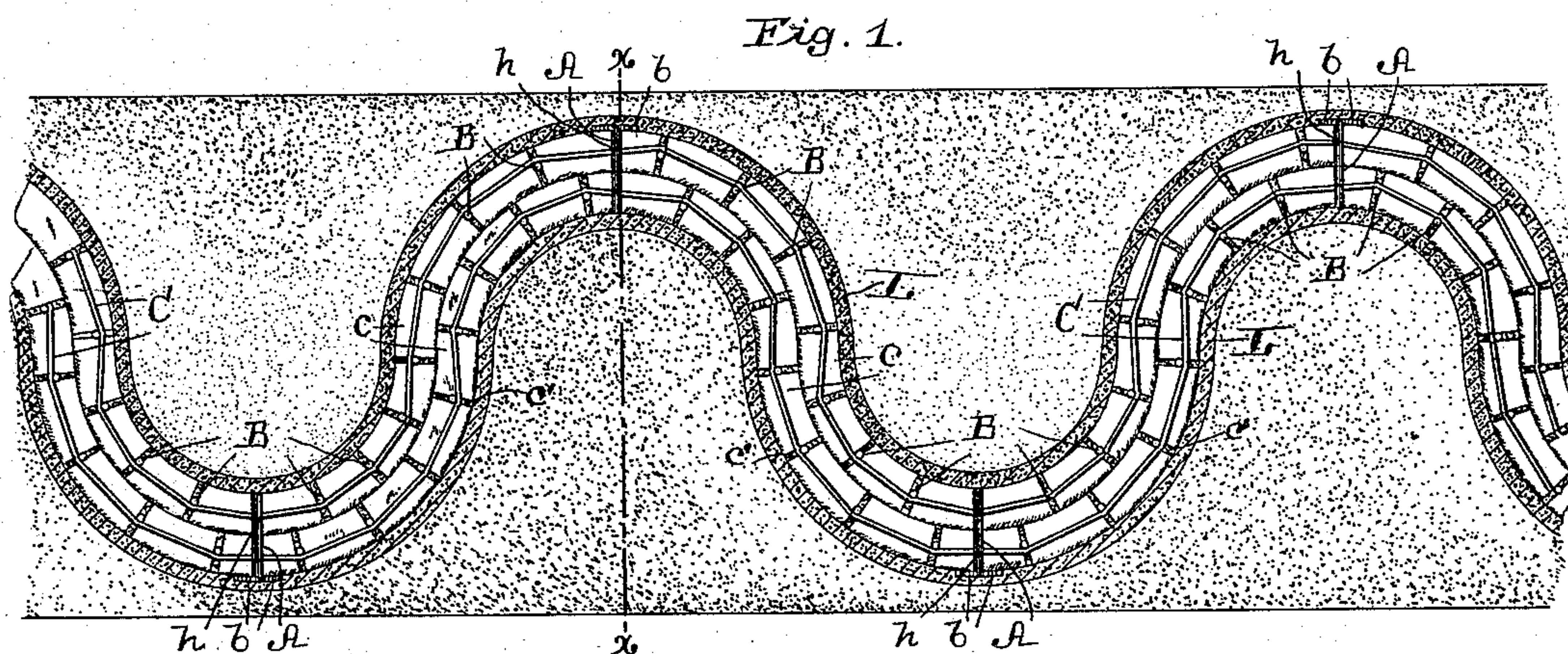


Fig. 2.

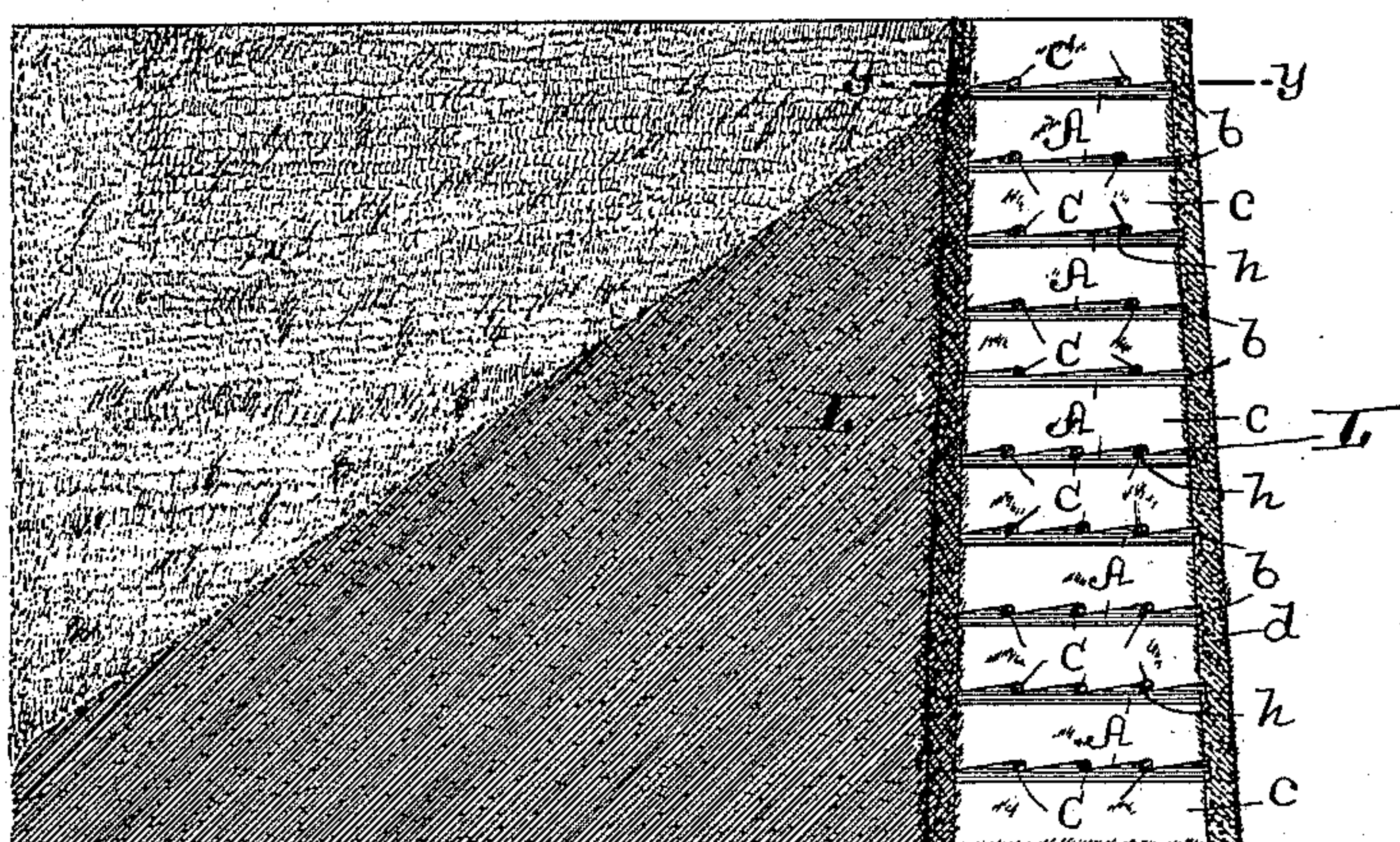
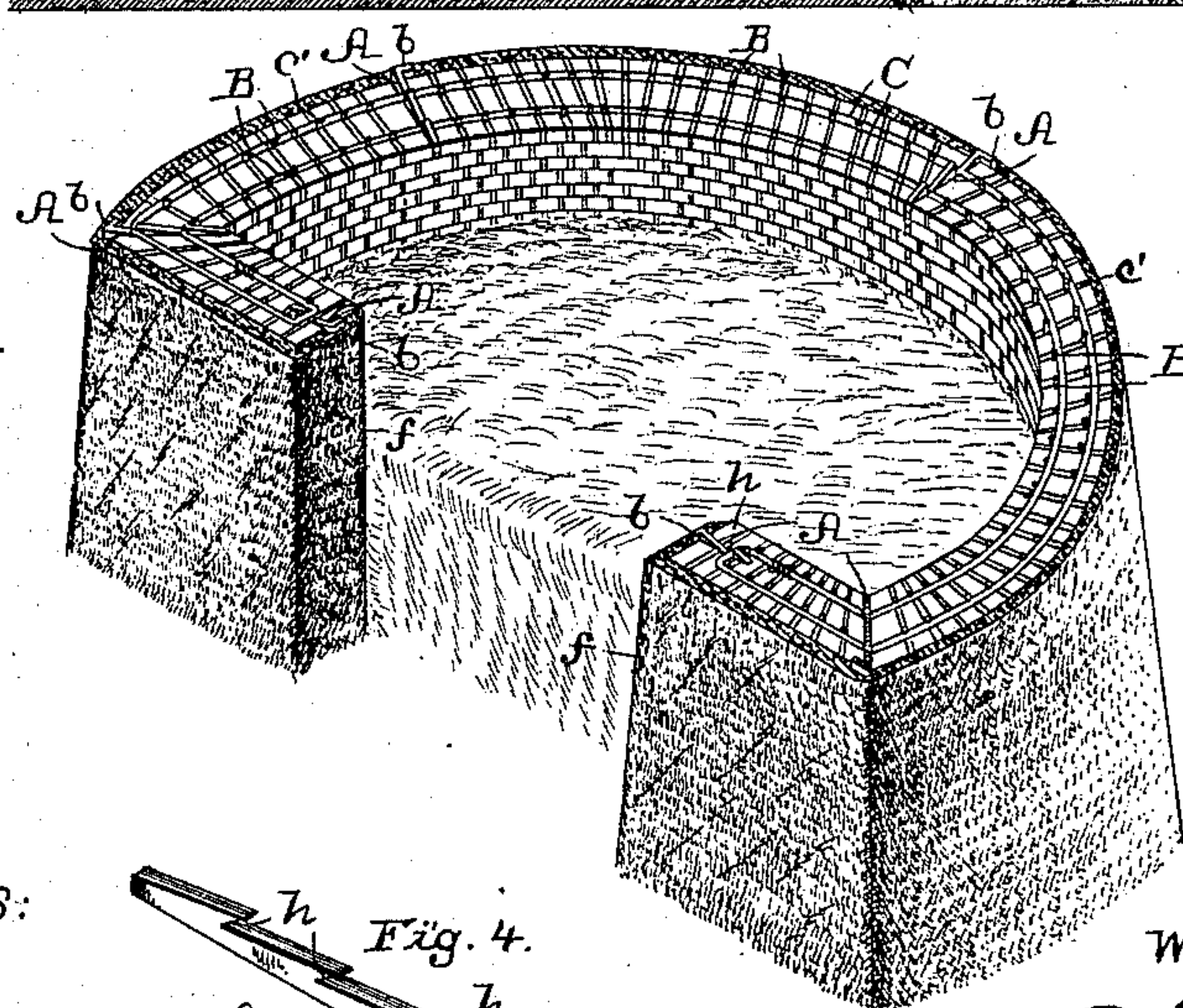
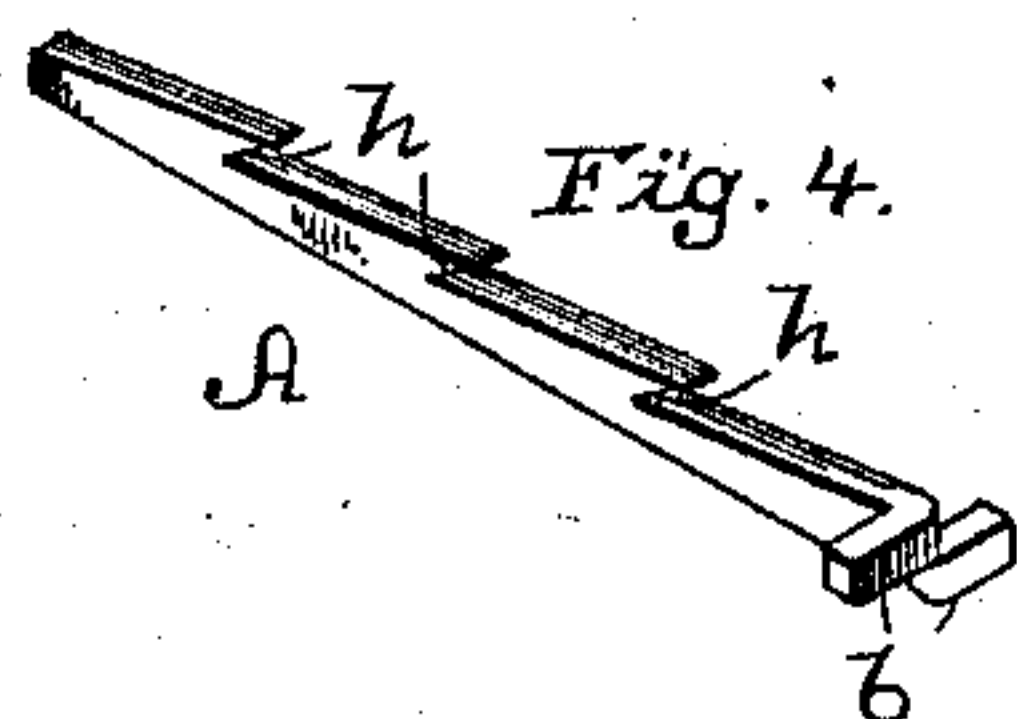


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM H. HARRELSON, OF KANSAS CITY, MISSOURI.

CONSTRUCTION OF RETAINING-WALLS.

SPECIFICATION forming part of Letters Patent No. 413,718, dated October 29, 1889.

Application filed June 29, 1889. Serial No. 316,061. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HARRELSON, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in the Construction of Retaining-Walls, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved method of constructing reservoirs, tanks, &c., for the storage of water and other liquids, the object being to provide a cheap efficient means for the re-enforcement and strengthening of the walls of reservoirs, tanks, &c., that are mainly composed of stones, bricks of burned clay, terra-cotta, or similar material, cement, lime, sand, &c.

With this object in view the invention consists in a certain novel construction and combination of parts, fully described hereinafter in connection with the accompanying drawings and specifically pointed out in the claims hereto appended.

In the drawings, Figure 1 is a sectional plan view of a retaining-wall constructed in accordance with my invention, taken on the line *y y* of Fig. 2. Fig. 2 is a vertical sectional view of the same on the line *x x* of Fig. 1. Fig. 3 is a perspective view of a section of the wall constructed in accordance with my invention, showing the manner of forming fills. Fig. 4 is a detail perspective view of the notched hook which is employed to hold the wire in position.

The wall is preferably built of bricks that are composed of clay and burned until hard, or stones dressed in proper shape may, if preferred, be used, said bricks or dressed stones being laid in regular layers, after the approved mode of placing such component parts or pieces of a wall, and as many rows of the brick as may be needed to give the necessary thickness to the wall are placed in said layers. Between the adjacent rows of bricks in each successive layer of the same the nails or pins *B B* are inserted, their heads projecting above the upper surface of the layers, so that wire hoops or rings *C* may be placed to engage the projecting upper ends or necks of the said pins, and by slight contraction of

the diameter of the lines of rings or by a slight tension on the wires in a horizontal layer of bricks the wall will be tightly bound to prevent lateral disruption.

It should be stated that between each two adjacent layers of bricks and also between the several rows which compose a layer the joints are rendered water-tight by the employment of cement in the plastic form, and when each successive layer of bricks or stones is coated with the cement or mortar the setting or hardening of the same will protect the wire from oxidation and also securely bind the entire mass of the wall together.

As an additional means for securing the wires in place, I employ a hook *A*, which is arranged transversely in the wall, and is provided with a series of notches *h* equal in number to the number of wires in use, said wires being passed through the notches, respectively. The hook is provided at one end with lateral wings *b b*, which bear against the surface of the wall, and thereby hold the hook in position and prevent slipping when the wires are strained. These hooks are especially adapted for use in walls which are built around circular inclosures or walls of a zigzag form, such as that shown in Fig. 1, which is composed of a series of oppositely-convexed arches, in which cases the hooks *A A* are arranged at the points of the greatest convexity or the points of the greatest strain, and their winged ends are arranged at the outer or convex surface of the wall, so as to prevent the tension of the wires from drawing them out of their proper position. On the inner surface of the wall a coating *L* of water-proof cement is evenly spread, of a suitable thickness to prevent any absorption of water or other liquid contents of the reservoir or tank by the pores of the bricks or stones comprising the wall, and a similar coating *L* of the cement may be and is preferably deposited on the outer surface of the wall. The heads or wings of the hooks *A A* are covered and held in place by the coatings on the surfaces of the wall, thus providing additional means of securement.

As it is evident that the pressure of the water or other liquid will be greater upon the bottom or lower portion of the wall than

upon the upper portion thereof, or that portion which is near the upper edge, it is essential that there should be increased strength given the lower part of the wall, and to this end the number of wires is increased in the lower portion, as shown clearly in Fig. 2 of the drawings. The relative number of wires is arranged to suit the character of the structure and the material which the space inclosed by the wall is designed to contain. In the drawings two wires are arranged in each layer in the upper portion of the wall—say from the center of its height upward—and three wires are arranged in each layer in the lower portion of the wall, or in that portion below the center. Obviously the number of notches in the hooks A is arranged according to the number of wires which they are to engage, those which are placed in the upper portion of the wall being provided with two and those in the lower portion with three notches, as shown.

In the drawings, *c c* represent the bricks or stones, which are laid according to the approved method of constructing walls, and the cement or mortar which is placed between said component parts or members of the wall is shown at *c'*, and is designed to hold the said component parts in position and also bind the nails or pins in place, to enable the wires to act directly on the parts of the wall to bind them together. The retaining-hooks A A are always arranged at the points of the greatest strain, as at the corners and other salient points of an angular wall or at the center of the convexity of an arched wall, as shown in Fig. 3, with their heads or lateral wings bearing against the surface of the wall, so as to resist or meet the strain of the wires.

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

1. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall of the structure, of notched hooks embedded in the wall at intervals, and the bands placed longitudinally in the wall to engage the notches in said hooks, substantially as specified.

2. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall, of notched hooks arranged in vertical series and embedded in the wall and placed transversely to the length of the same, and the bands embedded in the wall in the planes of said hooks and placed to engage the notches therein, substantially as specified.

3. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall, of notched hooks arranged at the salient points of the wall and provided with lateral wings to bear against the outer or convex surface of the same, and the bands embedded in the wall and placed to engage the notches of the said hooks, substantially as specified.

4. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall, of the pins or nails embedded therein in horizontal series, the wires or bands placed to engage the projecting ends of said pins or nails, and the notched hooks arranged at the salient points of the wall and engaging the said wires or bands, said hooks being provided with lateral wings to bear on the surface of the wall, substantially as and for the purpose specified.

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

WILLIAM H. HARRELSON.

Witnesses:

F. G. FISCHER,
A. A. HIGDON.