

(No Model.)

2 Sheets—Sheet 1.

J. E. ROBINSON.

COFFER DAM.

No. 414,083.

Patented Oct. 29, 1889.

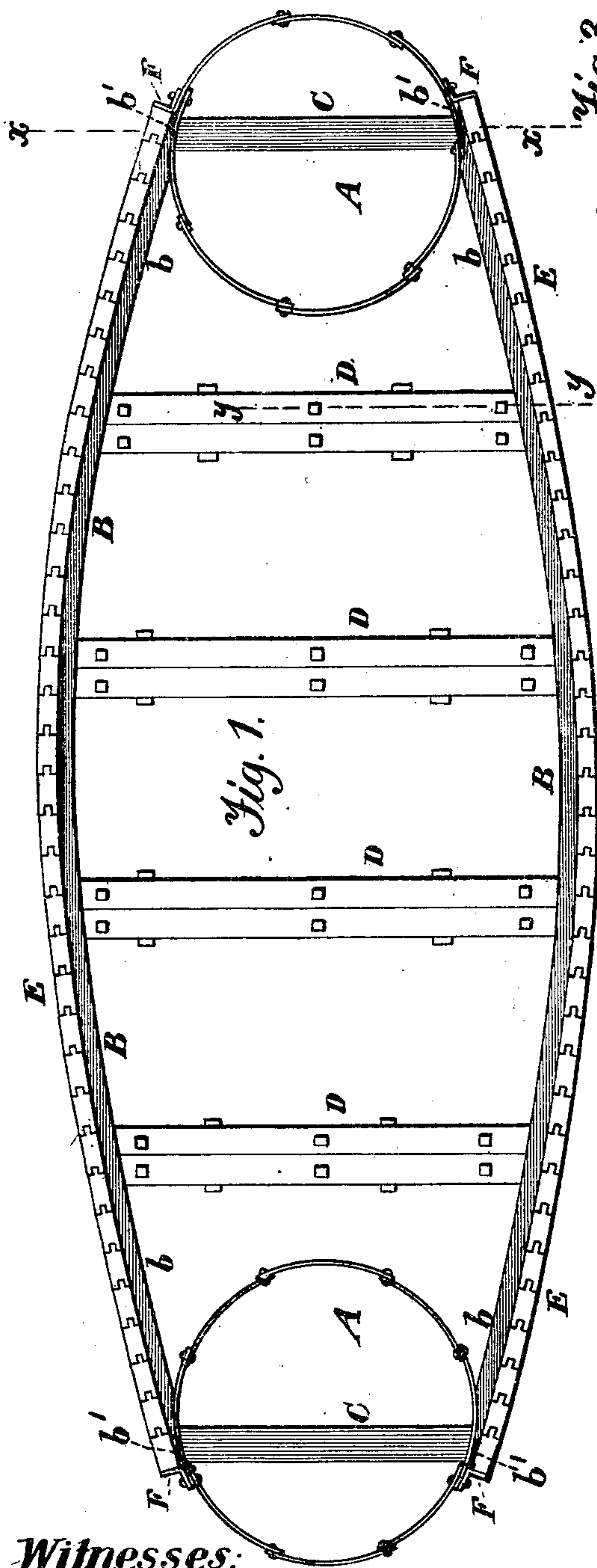


Fig. 3.

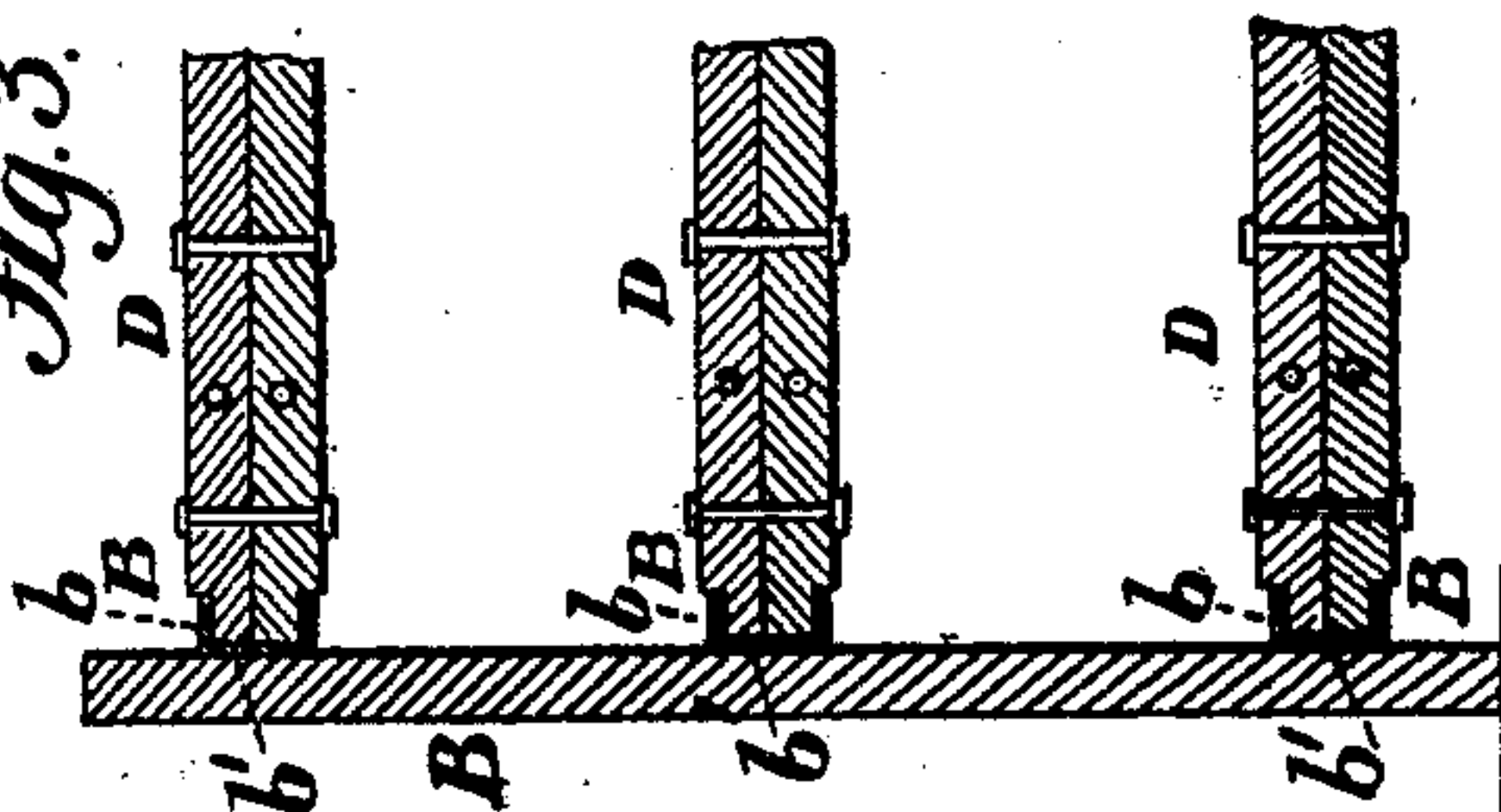


Fig. 2.

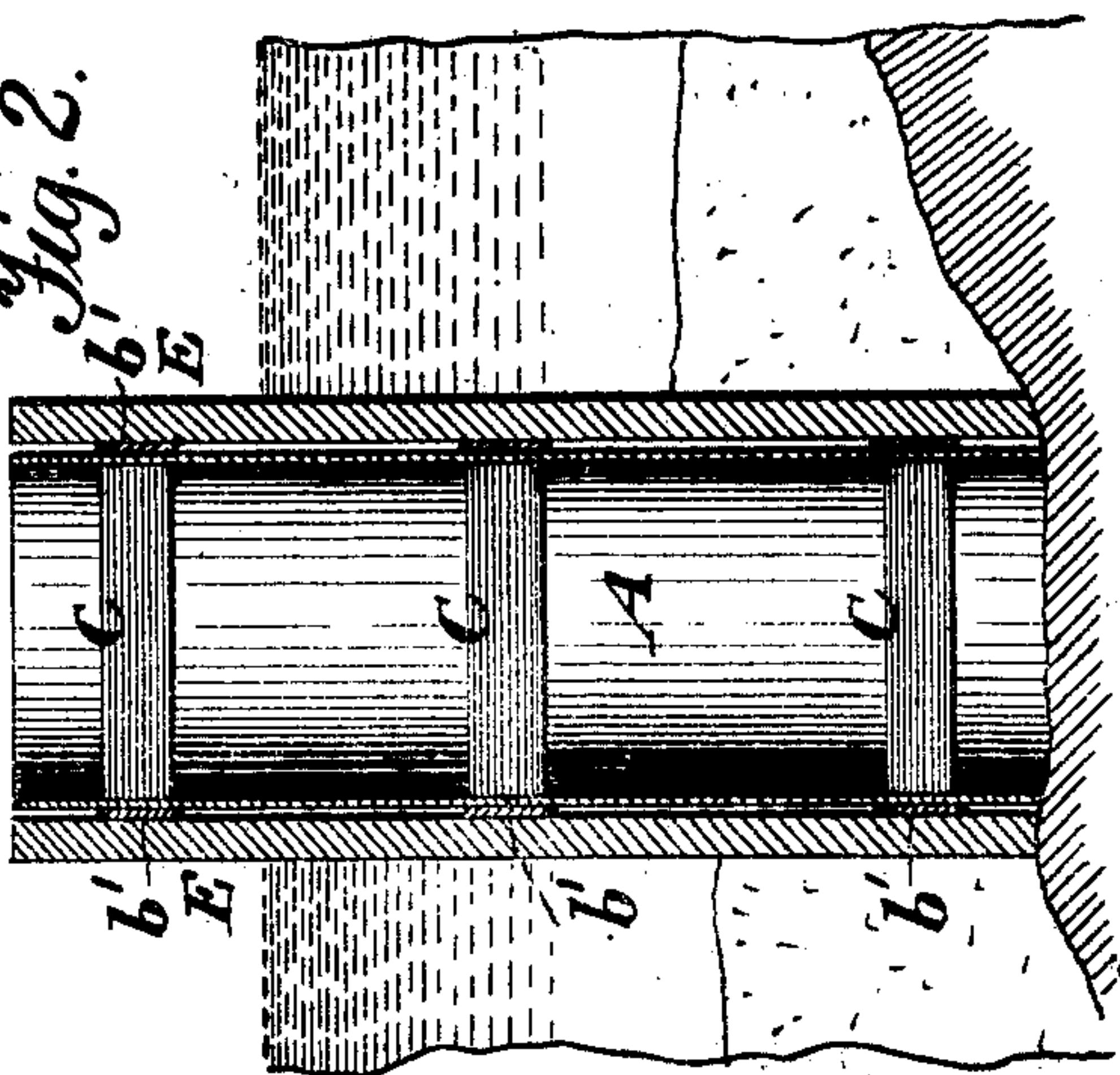
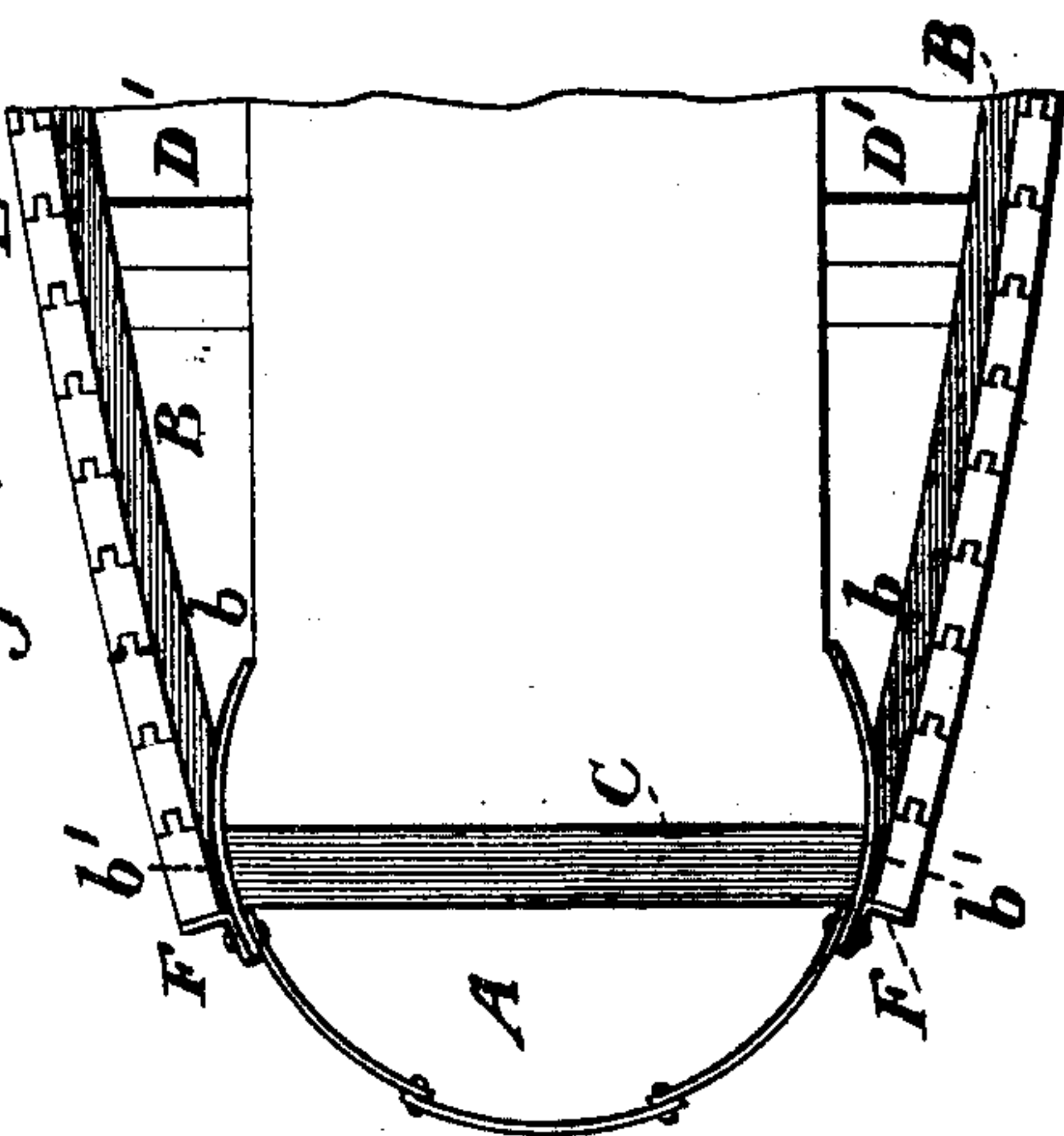


Fig. 4.



Witnesses:  
A. Ruppert.  
E. Lense

Inventor:  
John E. Robinson,  
by *[Signature]* atty.

(No Model.)

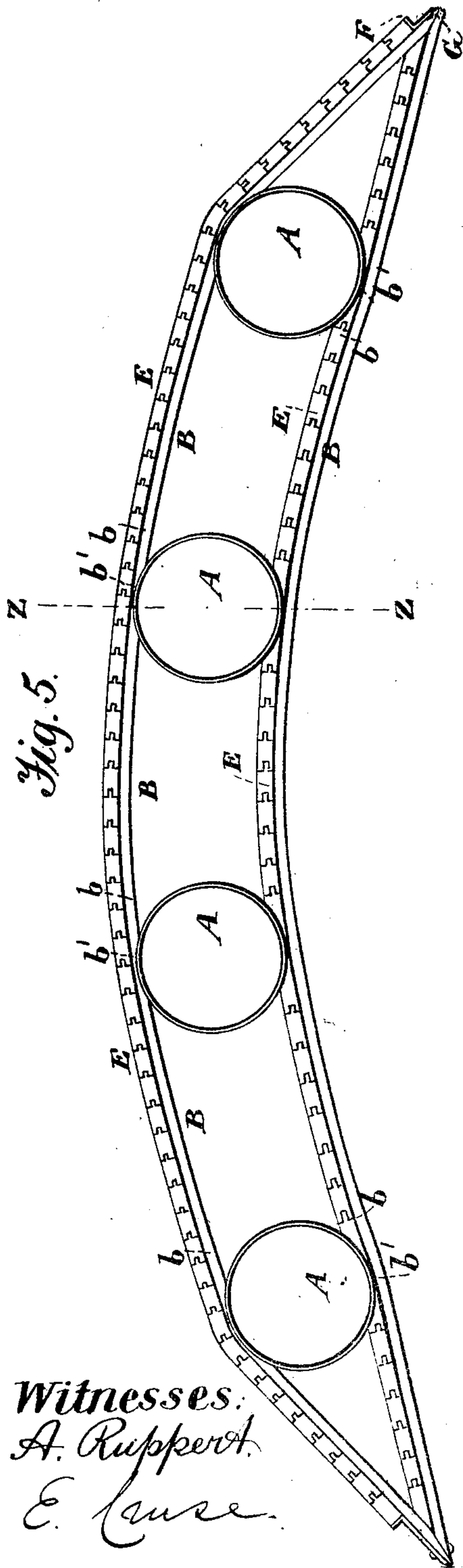
2 Sheets—Sheet 2.

J. E. ROBINSON.

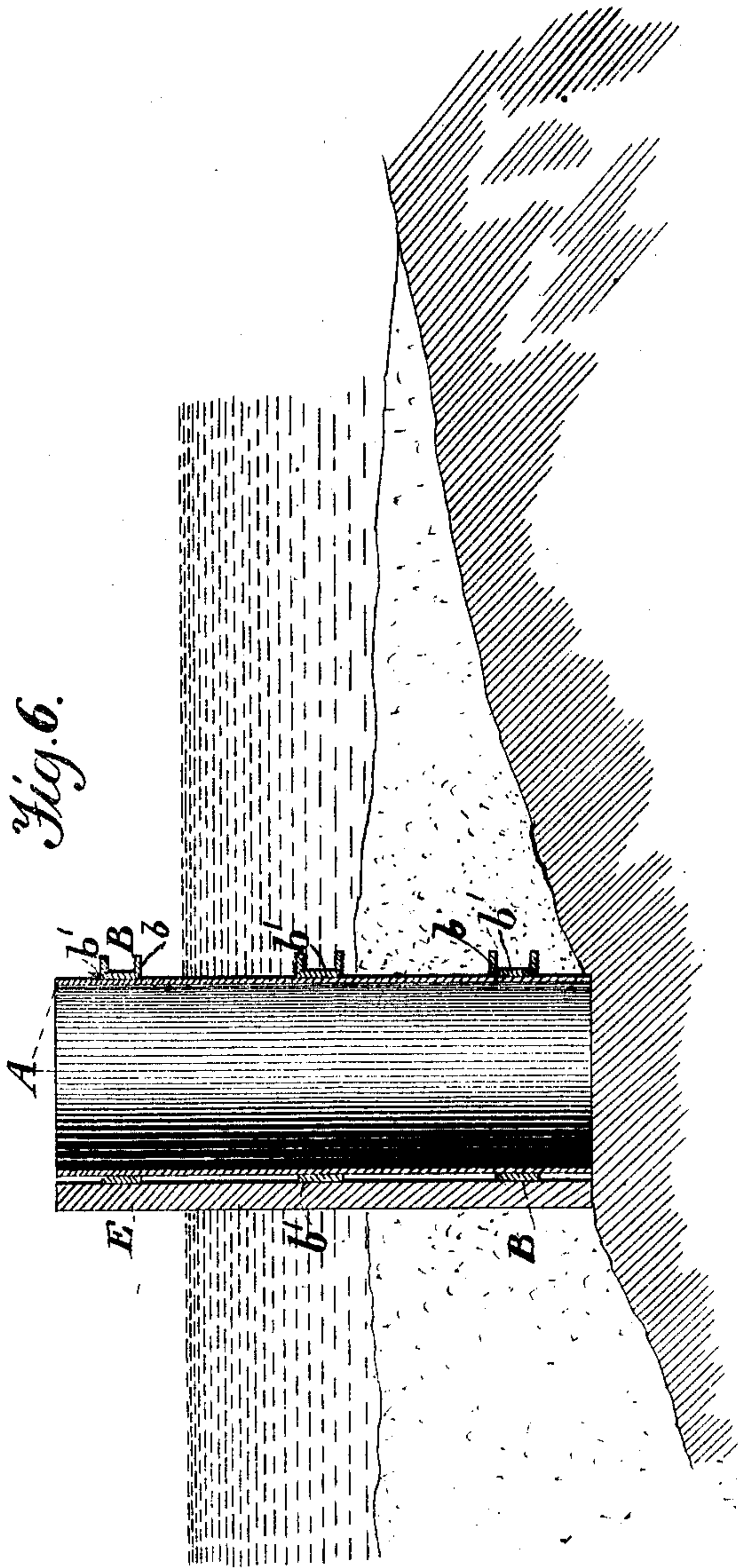
COFFER DAM.

No. 414,083.

Patented Oct. 29, 1889.



Witnesses:  
A. Ruppert.  
E. Cause.



Inventor:  
John E. Robinson,  
by *W. J. Howard*  
Attorney



# UNITED STATES PATENT OFFICE.

JOHN E. ROBINSON, OF PHILADELPHIA, PENNSYLVANIA.

## COFFER-DAM.

SPECIFICATION forming part of Letters Patent No. 414,083, dated October 29, 1889.

Application filed June 10, 1889. Serial No. 313,683. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. ROBINSON, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Coffers-Dams, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 The object and nature of my invention will be fully set forth in the following specification and claims.

In the drawings, Figure 1 is a plan of my improved coffer-dam. Figs. 2 and 3 are vertical transverse sections on the lines  $xx$  and  $yy$ , respectively, of Fig. 1. Fig. 4 is a plan of a portion of a coffer-dam after the masonry has been built. Fig. 5 shows a modification of my invention; and Fig. 6 is a vertical transverse section on the line  $zz$ , Fig. 5.

Similar letters of reference indicate similar parts in the several figures.

A A represent cylinders made in vertical sections, bolted together in the usual manner.

25 B B are whaling-pieces, preferably of channel-iron, and arched as shown. The flanges  $b$  of the channel-irons B are cut away at each end to allow the flat portion  $b'$  to rest against the cylinders. As many whaling-pieces may be used as desired; in the drawings three are represented. Suitable braces C extend across the cylinders opposite the whaling-pieces, to prevent the cylinders being crushed in.

35 D D are braces extending across from the whaling-pieces on one side to those opposite. These braces may be made to abut against the channel-irons in various ways well known in the art. In the drawings I have shown them notched into the channel-irons so that their ends abut against the flat portion  $b'$ .

40 E represents matched piling driven down so as to bear against the outer surface of the flat portion  $b'$  of the channel-irons.

F are angle-irons bolted, preferably, to the cylinders and extending their entire length, for the purpose of forming abutments against which the end piles on each side of the cylinders may rest.

50 In operation the whaling-pieces are suitably secured to the cylinders, the braces D and C secured in their respective positions, and the whole sunk in the desired location.

The piling is then driven in its place, after which the water and mud are removed from the interior of the coffer-dam. As the masonry progresses the long braces D are removed and short braces D', which abut against the masonry and the whaling-pieces, as shown in Fig. 4, substituted. The sections of the cylinders within the coffer-dam can also be removed and the masonry extended into the cylinders. By this arrangement the coffer-dam can be shortened to a considerable extent, and, as a consequence, the expense of constructing it decreased.

65 Referring to Figs. 5 and 6, I have here shown my invention applied to a dam which may extend across a wide space for the purpose of holding back water, &c., when it is desired to perform any work pertaining to hydraulic engineering at some distance from the inner side of the dam. In this case the whaling-pieces on the inner side of the dam have their flat portion  $b'$  against the cylinders, and the flanges  $b$  do not come in contact with them. On the outer side of the dam the flanges  $b$  are cut away, as in Fig. 1, to allow the flat portion  $b'$  to come against the cylinders. The whaling-pieces are arched and are attached to the cylinders so that those on one side will be concentric with those on the opposite side as far as the cylinders extend. The whaling-pieces extend beyond the end cylinders and are bent in opposite directions, so as to bring them to a point G, where they are bolted together, thus rendering the whole structure compact and preventing its being twisted out of position. The piling E is driven on the outer periphery of the whaling-pieces on both sides of the cylinders, and, as it is not intended to excavate inside the cylinders or between the piling, the braces C and D may be omitted.

95 Angle-irons F may be bolted to the ends of the whaling-pieces on the outer face of the dam, if necessary, to form an abutment for the end piles.

Having described my invention, I claim—

1. In a coffer-dam, the combination, with a series of cylinders at a distance from each other, of arched whaling-pieces bolted to said cylinders on opposite sides and piling driven against the face of the whaling-pieces, substantially as described.

2. In a coffer-dam, the combination, with a



series of cylinders at a distance from each other, of arched whaling-pieces bolted to said cylinders on opposite sides, piling driven against the face of the whaling-pieces, and  
5 braces extending from the whaling-pieces on one side to those opposite, substantially as specified.

3. In a coffer-dam, the combination, with a series of cylinders at a distance from each  
10 other, said cylinders being made of vertical sections bolted together, of arched whaling-pieces secured to said cylinders on opposite sides thereof, braces extending across the cylinders opposite the whaling-pieces, and piling  
15 driven against the face of the whaling-pieces, substantially as specified.

4. In a coffer-dam, the combination, with a series of cylinders at a distance from each other, of arched whaling-pieces bolted to said cylinders on opposite sides thereof, piling  
20 driven against the face of the whaling-pieces, and angle-irons to form an abutment for the end piles, substantially as specified.

In testimony whereof I have hereunto set my hand and seal.

JOHN E. ROBINSON. [L. S.]

Witnesses:

E. CRUSE,

G. H. HOWARD