

No. 670,778.

Patented Mar. 26, 1901.

O. GUTHRIE.

CONSTRUCTION OF TUNNELS FOR SEWERS, &c.

(Application filed June 16, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

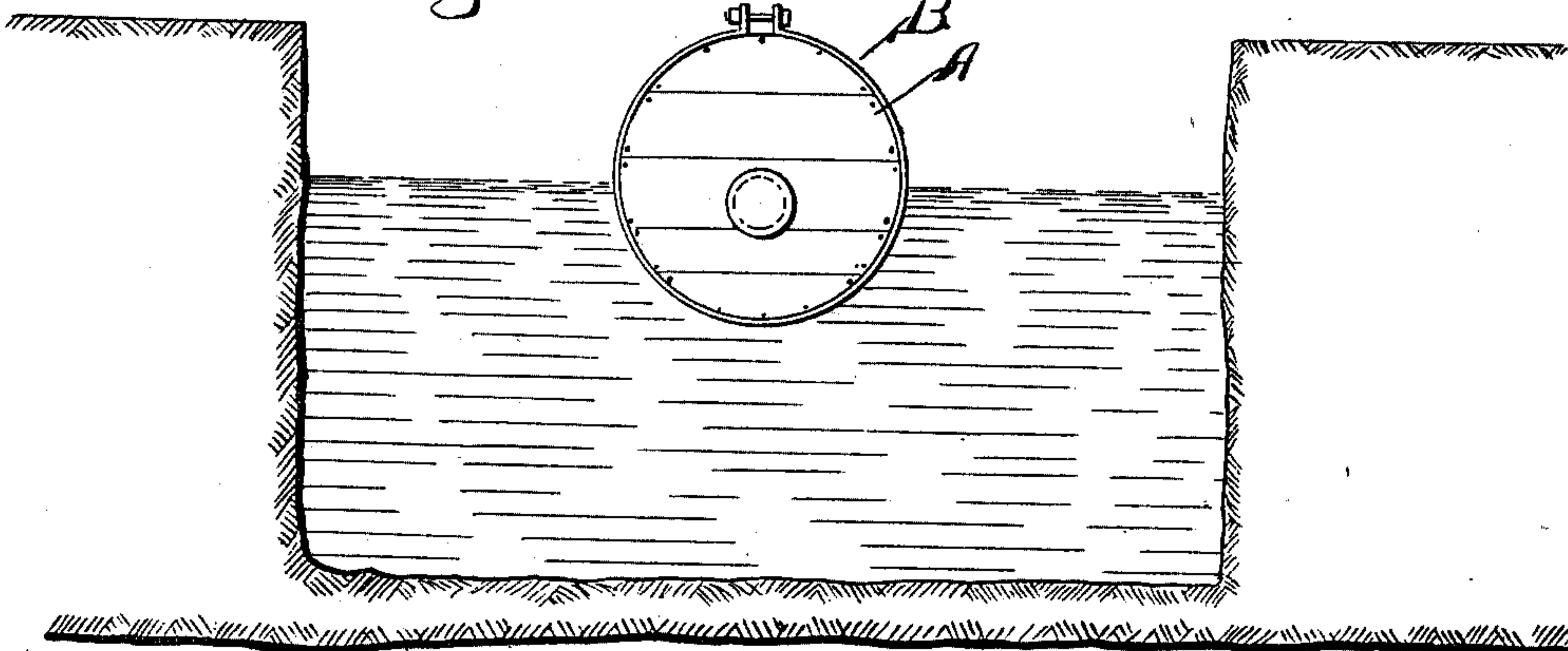


Fig. 2.

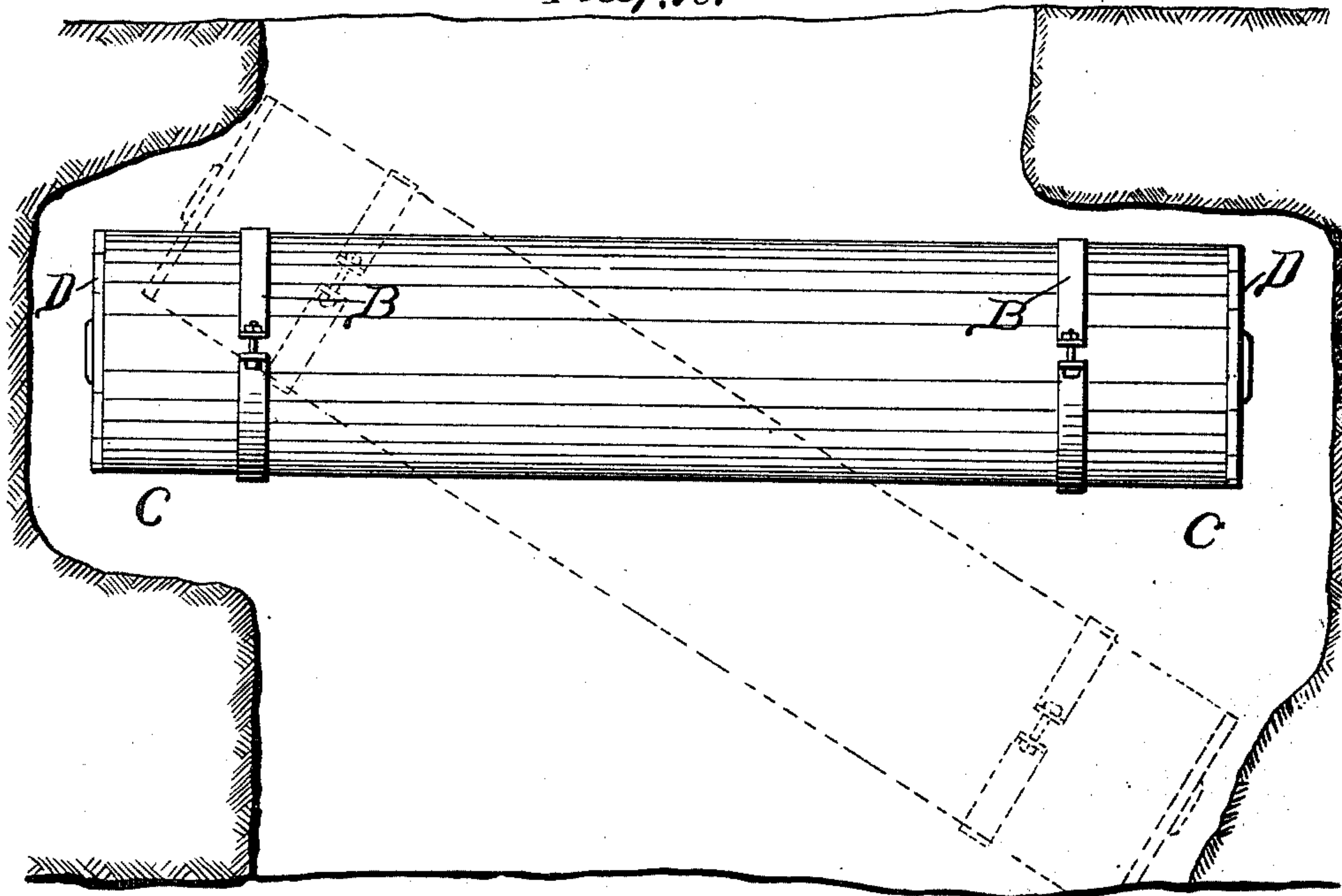
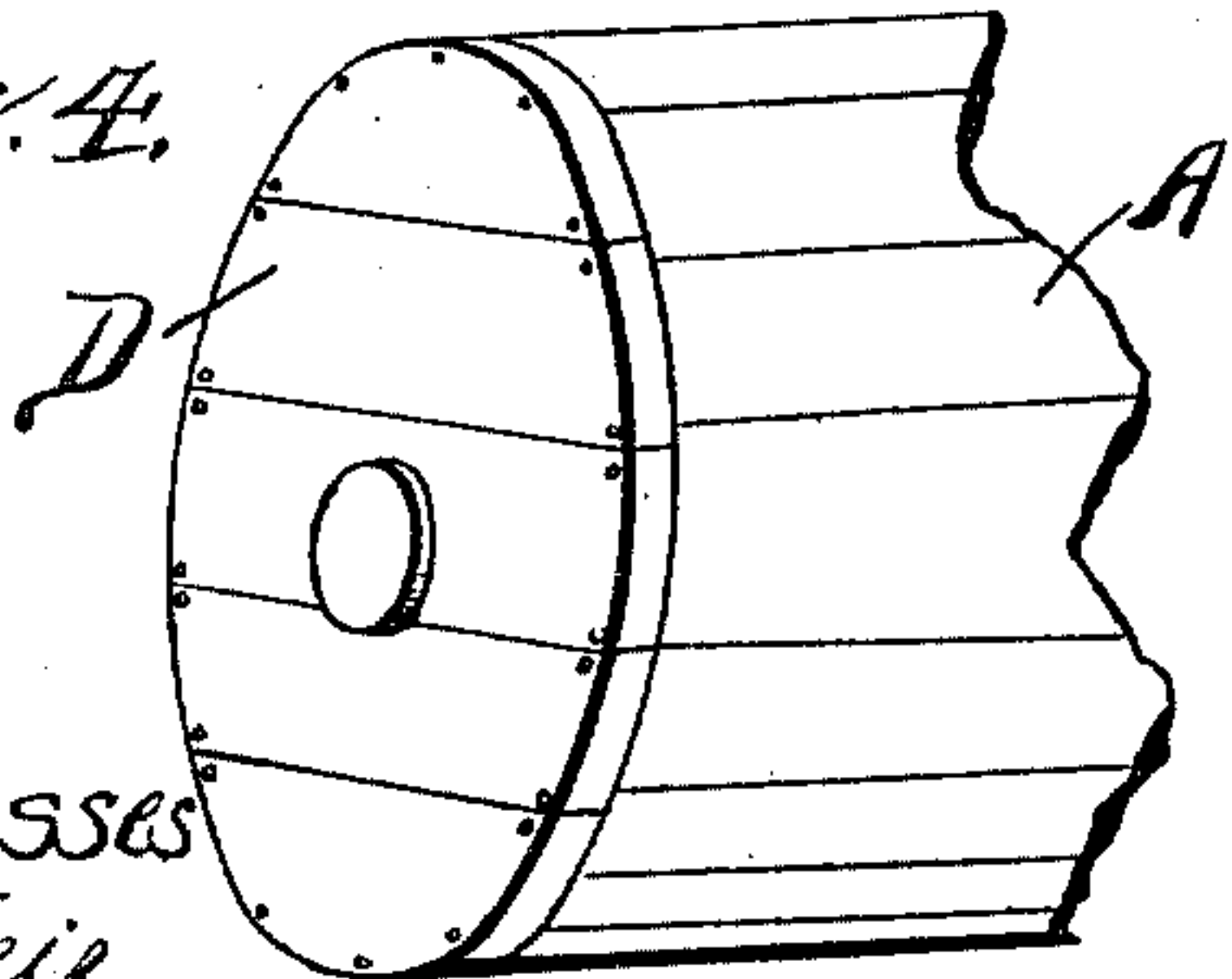
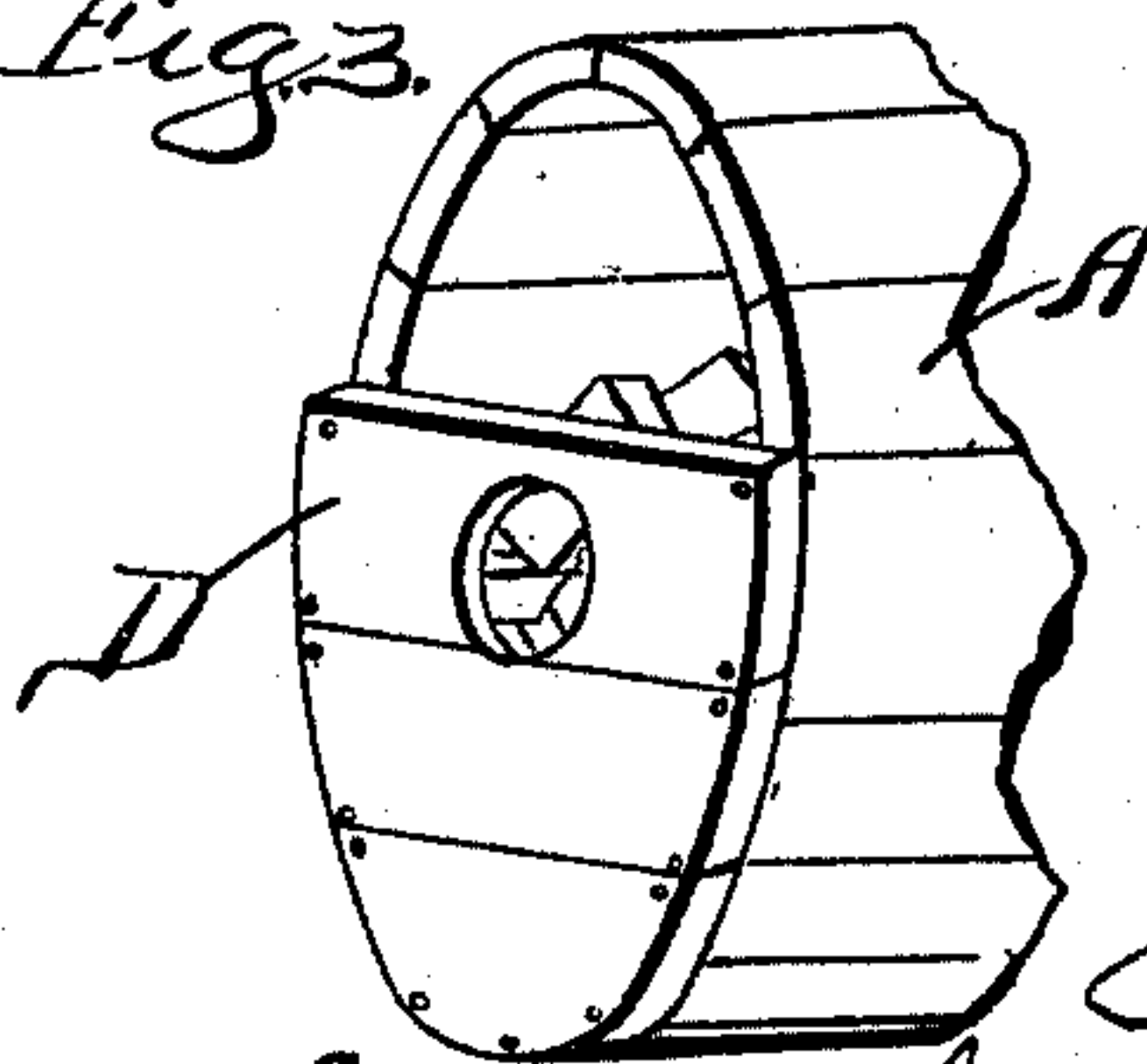


Fig. 4.



Witnesses
J. B. Keir
Ora D. Perry

Fig. 3.



Inventor
Ossian Guthrie
By
Morrison & Darby

No. 670,778.

Patented Mar. 26, 1901.

O. GUTHRIE.

CONSTRUCTION OF TUNNELS FOR SEWERS, &c.

(Application filed June 18, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 5.

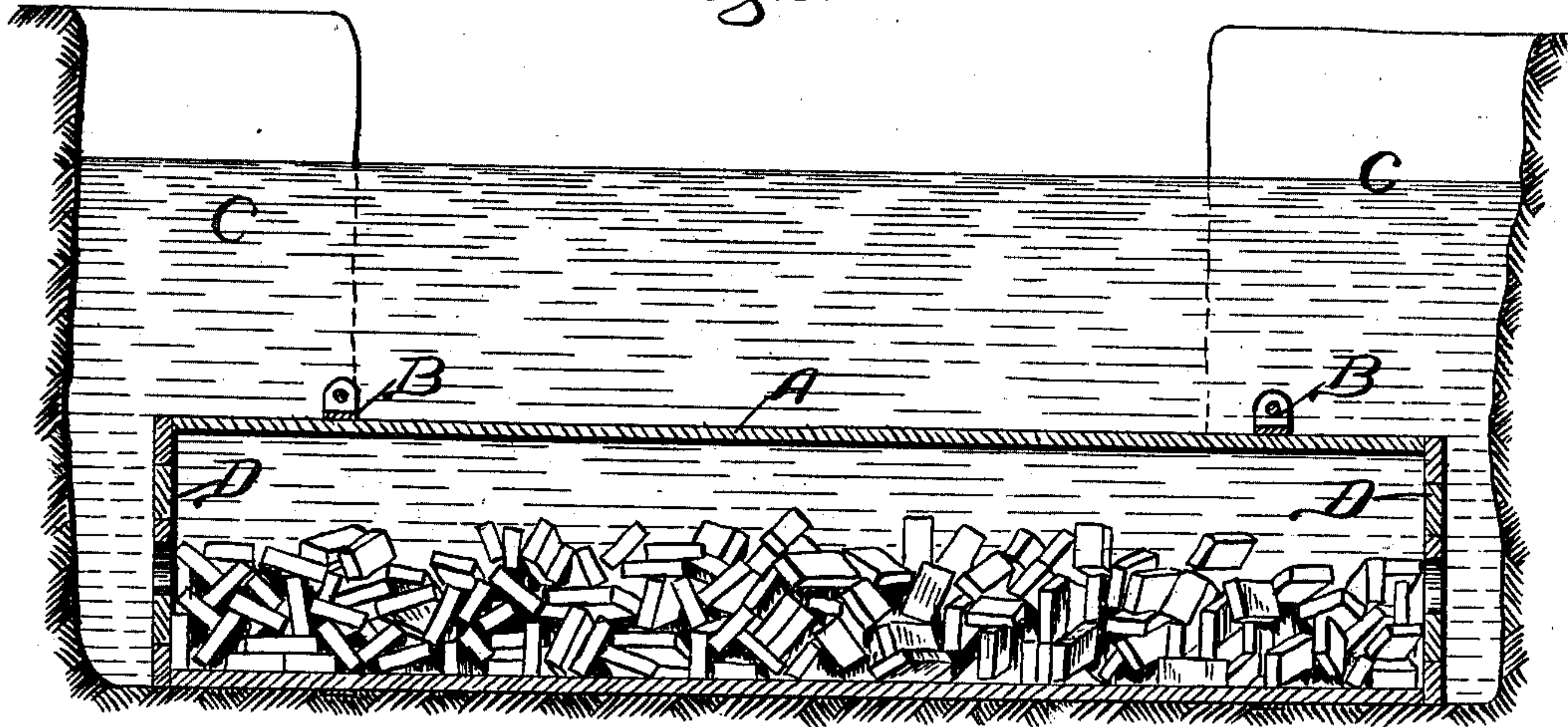


Fig. 6.

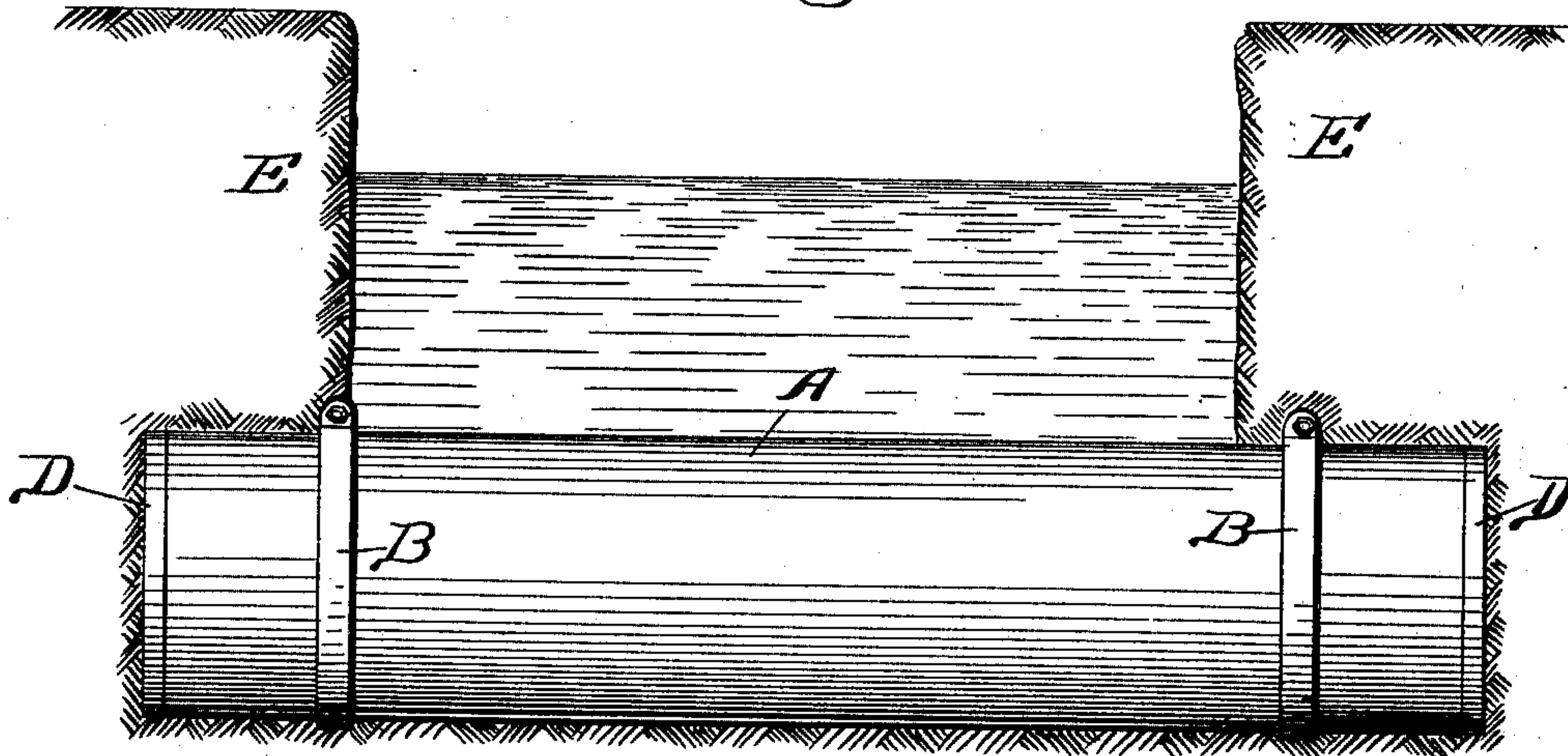
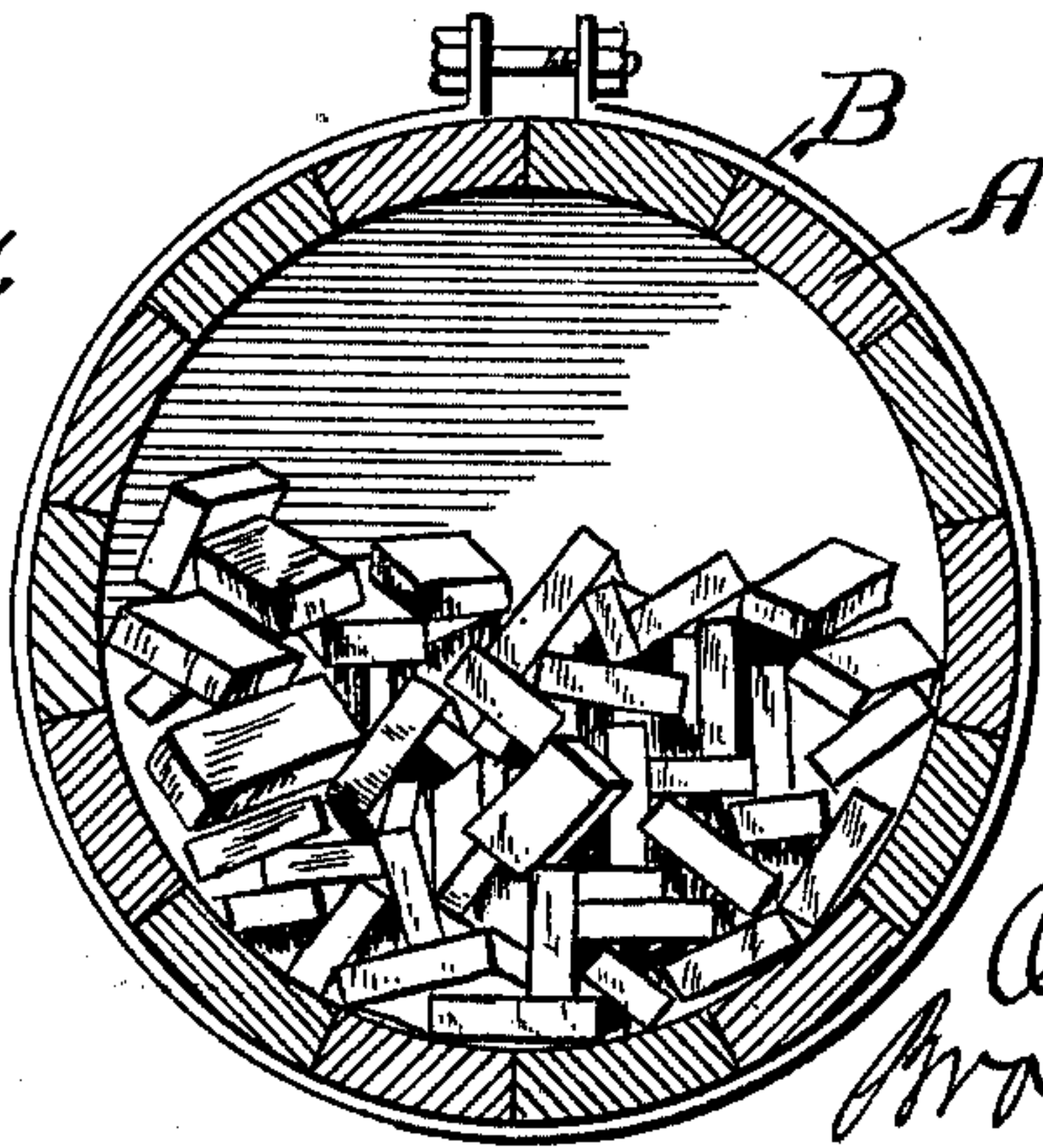


Fig. 7.



Witnesses:
J. B. Keir
Ora D. Perry

Inventor:
Ossian Guthrie
Brown & Darby
Atty

UNITED STATES PATENT OFFICE.

OSSIAN GUTHRIE, OF CHICAGO, ILLINOIS.

CONSTRUCTION OF TUNNELS FOR SEWERS, &c.

SPECIFICATION forming part of Letters Patent No. 670,778, dated March 26, 1901.

Application filed June 16, 1900. Serial No. 20,608. (No model.)

To all whom it may concern:

Be it known that I, OSSIAN GUTHRIE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Construction of Tunnels for Sewer or other Purposes, of which the following is a specification.

This invention relates to the construction of tunnels for sewer or other purposes.

The object of the invention is to provide a simple and efficient method for tunneling under or through rivers, channels, canals, and the like for sewer or other purposes.

The invention consists, substantially, in the method of procedure and operation hereinafter set forth more fully, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a view in transverse section of a channel, canal, river, or the like, showing a floating shell, tube, or the like. Fig. 2 is a broken plan view showing the shell, tube, or the like floated into position to be lowered into place. Fig. 3 is a broken detail view in perspective of the end of the shell or tube before it is entirely closed. Fig. 4 is a similar view after such end is closed. Fig. 5 is a transverse section of the canal, channel, or the like, showing the tube or shell in longitudinal section and lowered into place. Fig. 6 is a similar view showing the tunnel completed. Fig. 7 is an end view of the tube or shell.

It is the primary purpose of this invention to provide a method which is simple, inexpensive, and efficient, whereby tunnels, sewers, and the like may be readily, economically, and easily constructed underneath or which may pass either wholly or partially through a river, canal, channel, or the like.

In carrying out my invention I provide a shell, tube, or drum (indicated at A) of an internal diameter sufficiently great to permit the construction of a tunnel or sewer of the desired size within the same. This shell or tube should be of a length exceeding the transverse width of the channel, canal, river, or the like and may be constructed in the usual or any well-known or convenient manner. In the form shown, to which, however,

the invention is not restricted, said tube is built up of suitable staves, after the fashion of a cylindrical tub or tube, suitably clamped by the bands B, so as to be water-tight. By constructing this tube or shell of wood it is capable of being floated upon the surface of the water in the canal, river, or the like, thus facilitating the transportation thereof to the point where it is to be employed. At this point the banks or sides of the channel, canal, river, or the like and also, if desired, a transverse seat or groove to receive the shell or tube, are excavated, as indicated at C, a sufficient excavation being made to enable the shell or tube to float around into the desired position, as indicated in Fig. 2, with the ends thereof projecting into the excavated spaces C and beyond the normal bounds or sides of the canal or river, as clearly shown in Figs. 2 and 5. When the shell or tube is floated into this position, it is sunk or lowered in any suitable manner to the bottom of the river or canal or into the seat in the bottom of the river or canal which has been excavated to receive it. The lowering or sinking of the shell or tube may be effected in any suitable or convenient manner, as by filling or partially filling the same with bricks, stones, or the like, as clearly shown. In practice I propose to load the shell with the bricks or stones to the point where it will just retain its buoyancy and then float the same to the point and into the position desired, as above explained. In order that the shell though loaded with the brick or stones may float, the ends thereof may be wholly or partially closed up, as indicated at D, Figs. 3 and 4. When the desired position is reached, one or both ends of the shell or tube may be opened up to permit the ingress of water, as by removing one or more of the end boards or by opening a plug-hole in the ends thereof, or otherwise. In this manner the shell, tube, or the like is caused to sink to the bottom and into place as required. The excavated portions or recesses C are then filled up again, as indicated at E, Fig. 6, thereby burying the shell or tube or the ends thereof and restoring the banks or sides of the canal, river, or the like to their normal bounds. Now by tunneling from land to the ends of the shell or tube a passage-way is opened up underneath or par-

tially or wholly through the channel, canal, river, or the like without difficulty, and the tunnel or sewer may then be constructed or built up within and through the shell or tube.

5 Of course the water contained therein or admitted thereto to aid in the sinking thereof must be pumped out; but this can be easily done, and the bricks or stones contained in the shell or tube may be employed in the construction of the sewer or tunnel.

10 In the manner above described a tunnel or sewer may be constructed expeditiously and economically and without arresting the flow of water in the canal, river, or the like or without stopping or impeding the navigation thereof.

It is obvious that a shell or tube may be lowered at any desired point in accordance with my invention and may remain buried, as described, being water-tight, until such time as it may be desired to complete the land connections to the ends thereof. It is also obvious that such tube may be buried so as to be wholly beneath the bottom of the canal or river or may lie partially or wholly above the bottom, the essential point being the placing of such tube so that it will not interfere when in place with the navigation of the canal or river.

30 Having now set forth the object and nature of my invention and the manner of carrying the same into practical operation, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

35 1. The method of constructing tunnels, sewers or the like, underneath or through rivers or canals, which consists in widening the river or canal at the point where the tunnel or sewer is to be located, then sinking a tube or shell transversely of the river or

canal at the widened portion thereof, then filling in the widened portion to bury the ends of said tube or shell, then tunneling to the ends of such shell or tube and finally building up or constructing the tunnel or sewer within said shell or tube, as and for the purpose set forth. 45

2. The method of constructing tunnels, sewers or the like, underneath or through rivers or canals, which consists in forming excavations in the banks or sides of the river or canal, then sinking a water-tight shell, tube or the like, transversely of the river or canal with the ends thereof in said excavations, then filling in said excavated portions to bury such ends, then forming land tunnels to the ends of said tube or shell and finally building up or constructing the tunnel or sewer within said tube or shell, as and for the purpose set forth. 55 60

3. The method which consists in forming excavations in the banks or sides of a river or canal, then floating a water-tight tube or shell to the point where such excavations are formed, and in crosswise relation to the river or canal, then sinking such shell or tube with the ends thereof projecting into such excavations, then burying such ends by filling in such excavations, then tunneling to the ends of such tube or shell and finally building up or constructing the tunnel or sewer within said tube or shell, as and for the purpose set forth. 65 70

In witness whereof I have hereunto set my hand, this 5th day of June, 1900, in the presence of the subscribing witnesses. 75

OSSIAN GUTHRIE.

Witnesses:

S. E. DARBY,
E. C. SEMPLE.