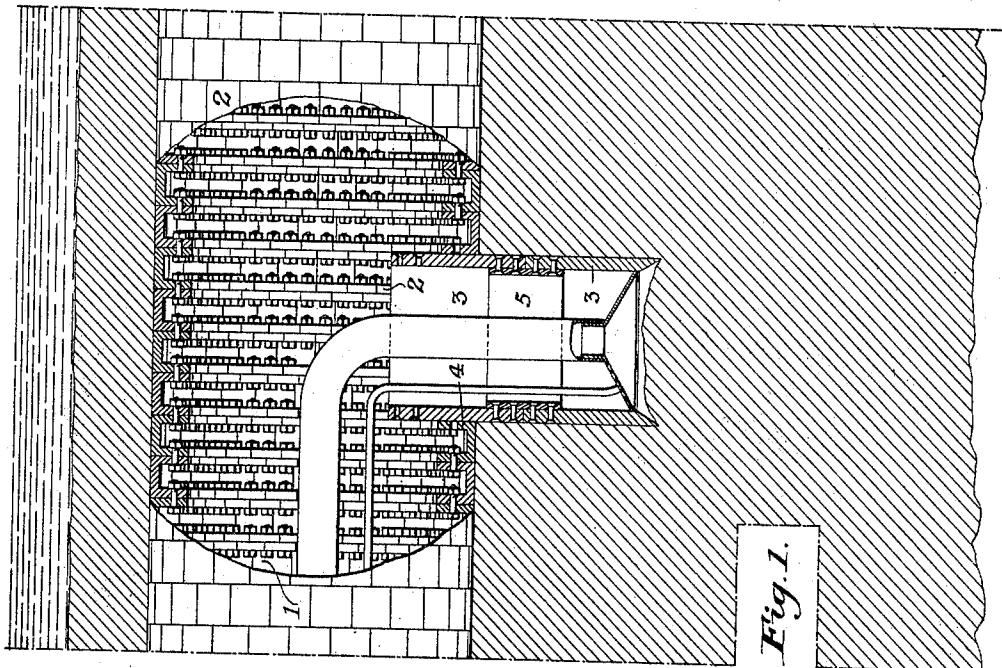
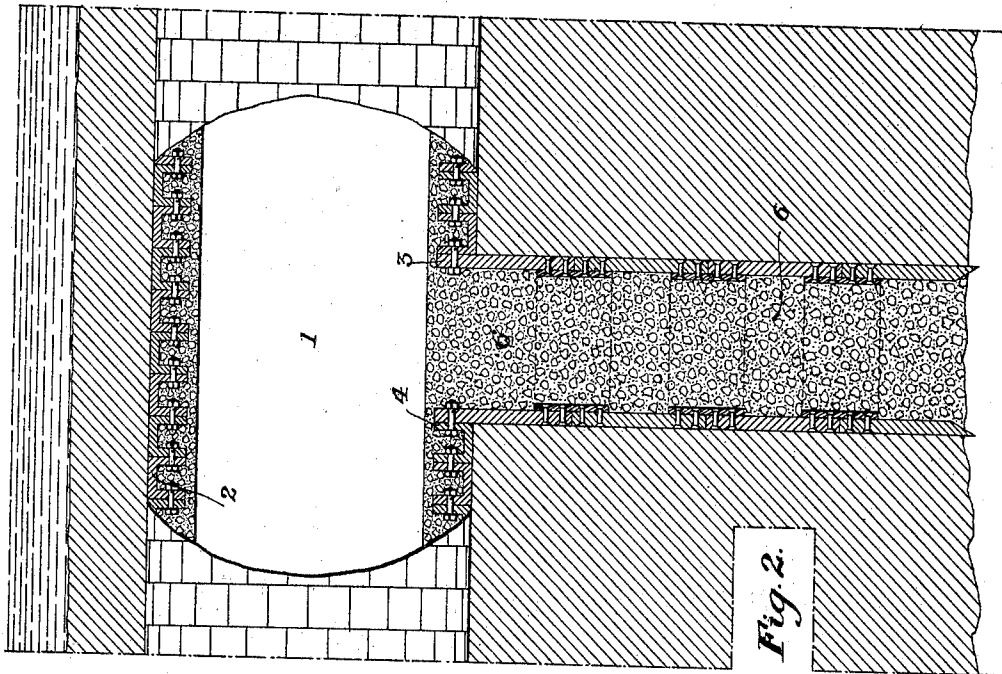


S. J. SYDNEY.
TUNNEL CONSTRUCTION.
APPLICATION FILED SEPT. 27, 1907.

967,264.

Patented Aug. 16, 1910.



WITNESSES:
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UNITED STATES PATENT OFFICE.

SIDNEY J. SYDNEY, OF PHILADELPHIA, PENNSYLVANIA.

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Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed September 27, 1907. Serial No. 394,845.

To all whom it may concern:

Be it known that I, SIDNEY J. SYDNEY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Tunnel Construction, of which the following is a specification.

My invention relates to sub-aqueous tunnels, and the object of my invention is to provide means for firmly supporting the same should the material upon which they rest be of a yielding nature. Tunnels of this character as ordinarily constructed, are made particularly heavy in order that they can remain submerged, for it is well known that their displacement is such that they would tend to rise unless held down. This increased weight, however, is frequently of such a character as to cause some difficulty in maintaining them supported upon the material upon which they are laid or through which they are passed; and the object of my invention is to provide means that will insure their stability. To this end, my invention comprises a leg or a series of legs for supporting the tunnel, which legs extend from the same to bed-rock or other good foundation.

My invention is fully shown in the accompanying drawings, in which:

Figure 1, is a sectional elevation of a portion of a tunnel, showing the manner in which a leg made in accordance with my invention is constructed and combined with the tunnel to support the same, and Fig. 2, shows a similar sectional view of a tunnel with the leg completed.

1 represents the bore of the tunnel, the walls of which are of the usual type, being generally made of sections such as illustrated at 2, which are secured together by suitable means and encircle such bore.

At any convenient point at the bottom of such tunnel, I either remove certain of the sections or provide special sections which will provide an aperture, preferably circular in shape, to receive a cylindrical member such as 3, which is placed within the same; the opening through the bottom of the tunnel being preferably provided with a flange 4 secured to the tunnel sections by suitable means.

The bed of the river or other place in

which the leg is to be disposed is excavated down to bed-rock, or to such a point as will insure a stable foundation for the leg, and the section 3 is lowered as fast as the material beneath the same is excavated in any suitable manner. Other sections will set in position with respect to the first section as the excavation deepens, and these subsequent sections are preferably secured to each other by any suitable means, although in the present drawings I have shown inner collars 5 riveted to the sections 3. The excavation continues until the point desired is reached when the final section is riveted fast to the flange 4 or bolted to the sections of the tunnel immediately surrounding said opening, and the bore of said sections 2 thus formed is filled with concrete or other material 6 in the manner illustrated in Fig. 2. If desired, the final section forming said leg may have a cover, and the concrete, of course, may be provided with metallic reinforcements if such is deemed necessary. The sections may also be provided with cross arms or other retaining means for the concrete, insuring that the leg is intimately connected with the tunnel it is desired to support.

I claim:

1. A supporting leg for tunnels consisting of a series of substantially cylindrical hollow shells, collars internally disposed and riveted to each pair of shells whereby they may be secured together, and bolts connecting the upper shell to the tunnel sections, said supporting leg extending between the tunnel and solid foundation.

2. A tunnel consisting of a series of metallic sections disposed in annular form and secured together to form a cylindrical structure, a lining of concrete for said tunnel, a series of cylindrical sections projecting from the lower portion of the tunnel, means for securing said sections together and to the tunnel, and a filling of concrete for said section, said concrete being integral with the concrete lining of the tunnel proper.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

SIDNEY J. SYDNEY.

Witnesses:

MURRAY C. BOYER,
WM. A. BARR.