

No. 760,243.

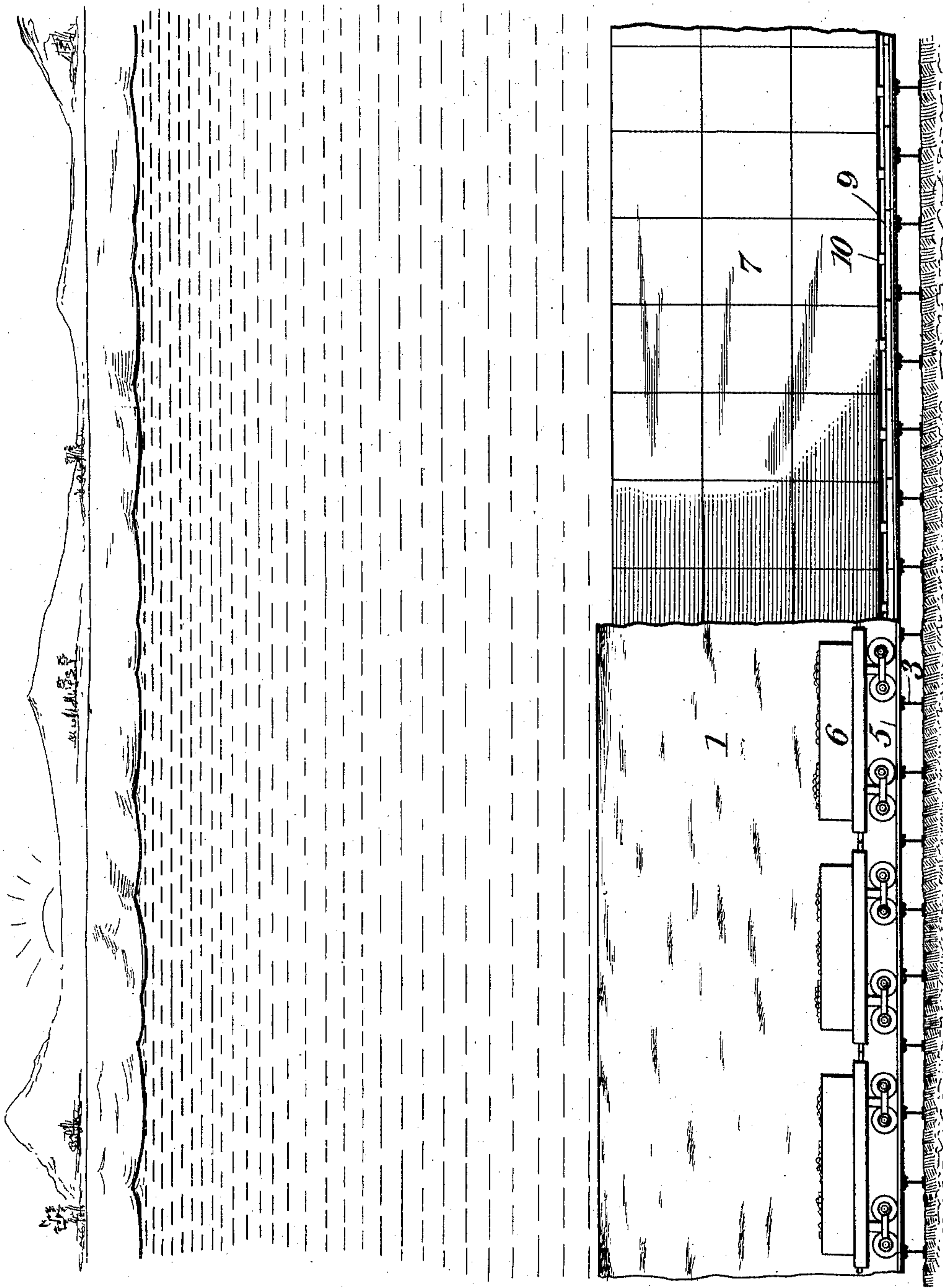
PATENTED MAY 17, 1904.

D. PHILLIPS.
TUNNEL CONSTRUCTION.

APPLICATION FILED SEPT. 19, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

A. Appleman
C. R. Ferguson

Fig. 1.

INVENTOR

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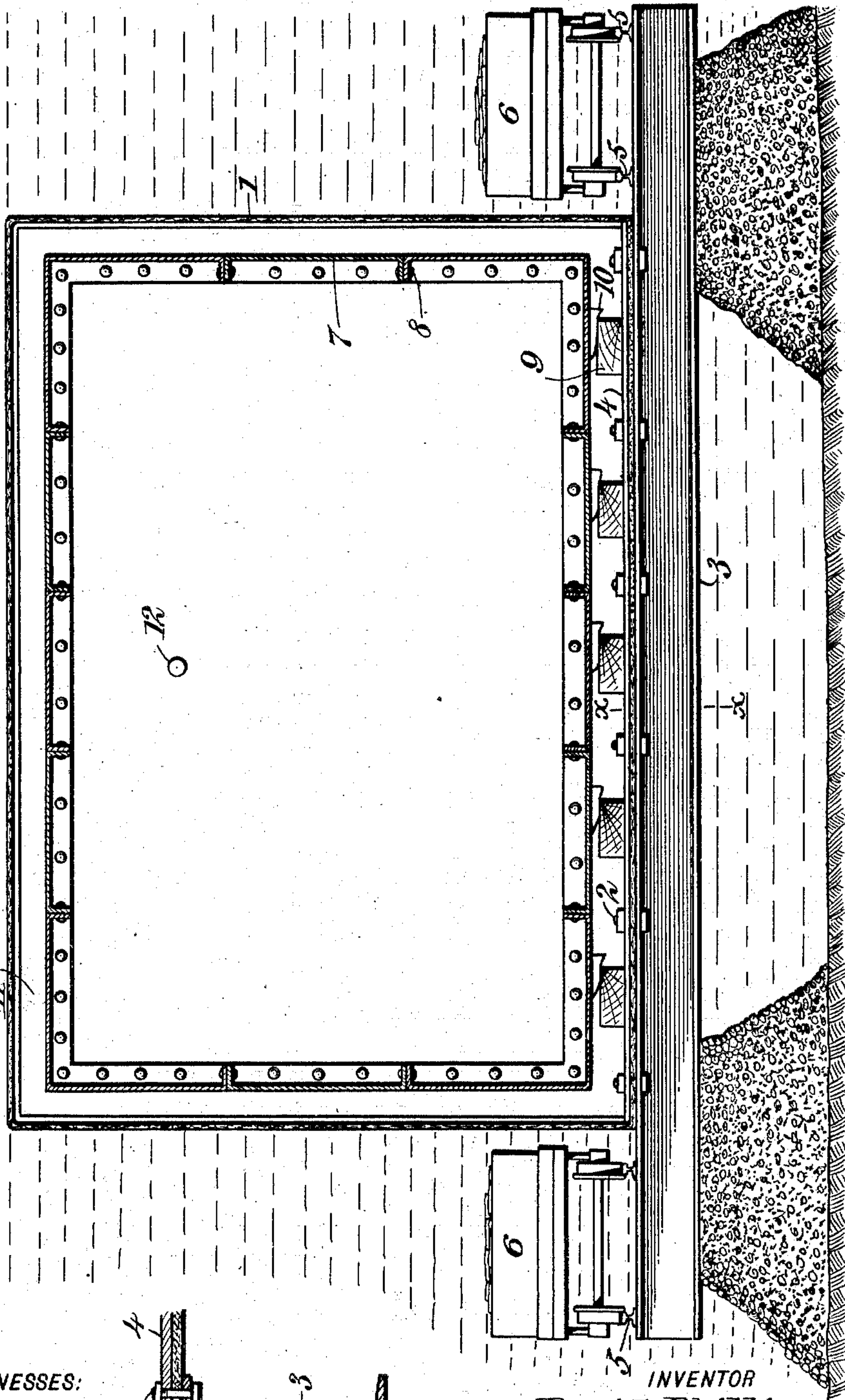
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2 SHEETS—SHEET 2.

Fig. 2.



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A. Appleman
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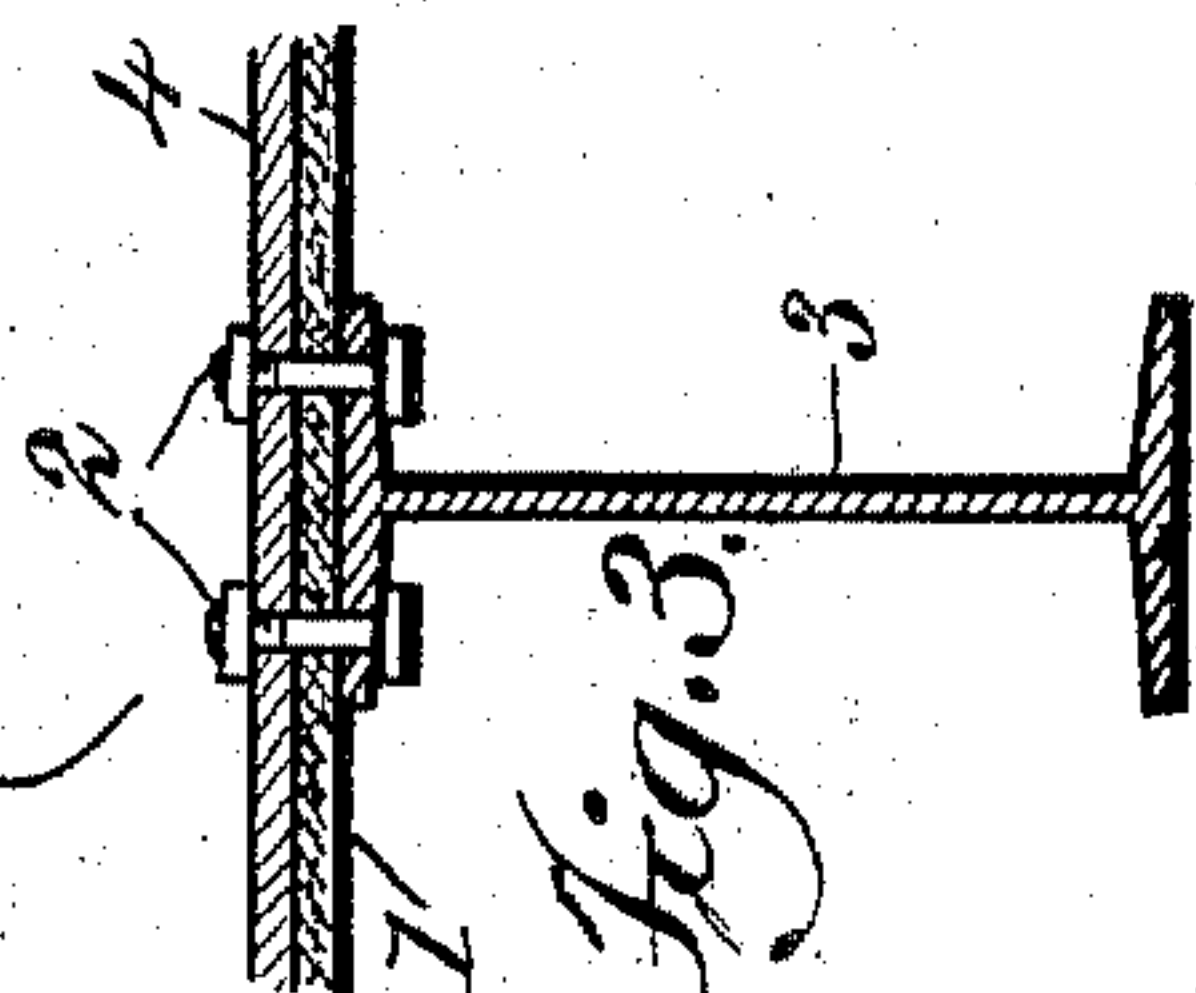


Fig. 3.

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UNITED STATES PATENT OFFICE.

DAVID PHILLIPS, OF PONY, MONTANA.

TUNNEL CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 760,243, dated May 17, 1904.

Application filed September 19, 1903. Serial No. 173,856. (No model.)

To all whom it may concern:

Be it known that I, DAVID PHILLIPS, a citizen of the United States, and a resident of Pony, in the county of Madison and State of Montana, have invented a new and Improved Tunnel Construction, of which the following is a full, clear, and exact description.

This invention relates to improvements in the art of constructing tunnels under water, an object being to provide a means whereby a submerged tunnel may be rapidly and safely built.

I will describe a tunnel construction embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a tunnel construction embodying my invention. Fig. 2 is a transverse section thereof, and Fig. 3 is a section on the line *x x* of Fig. 2.

In constructing a tunnel I employ a false tunnel or casing 1 of inflatable material—such, for instance, as canvas—properly treated to render it water and air tight. The bottom wall of the false tunnel is secured, by means of bolts 2, to I-beams or ties 3, the said bolts 2 passing through stay-plates 4 on the inner side of the false tunnel, as clearly shown in Fig. 2. The ends of the ties 3 extend outward from the sides of the false tunnel, and on these extended ends are track-rails 5, on which cars 6, loaded with pig-iron or other suitable weights, are to be run in order to sink the false tunnel.

The permanent tunnel, built within the false tunnel, consists of rectangular metal plates 7, having inwardly-extending flanges, through which fastening-rivets 8 extend. This tunnel rests upon longitudinally-arranged beams 9, and it may be trued up by means of wedges 10 between said beams and the bottom of the tunnel. The permanent tunnel at its shore ends will preferably rest on solid foundations, and at desired intervals supports may be

formed by rocks and gravel, and where these supports are arranged the ties 3 are lifted and rest upon said supports. After finishing the tunnel, however, the ties between the said supported ties, with the false tunnel, are to be removed.

In operation the false tunnel, which is divided into compartments by bulkheads 11, each provided with a valve 12, while in a collapsed state, with the ties attached, is to be discharged from a vessel until extended entirely across the bed for the tunnel, and then a compartment is to be inflated and a section of permanent tunnel built therein, after which the next section, by opening the valve 12, is to be inflated, the weighted cars run thereon, and another section of permanent tunnel built and joined to the preceding one, as indicated in the patent granted to me under date of August 25, 1903, No. 377,466.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a tunnel construction, an inflatable false tunnel or casing, cross-ties secured to the bottom of said casing and extended outward from the sides thereof, car-tracks arranged on said extended ends, and a fixed tunnel within the false tunnel.

2. In a tunnel construction, an inflatable false tunnel or casing, cross-ties to which the bottom of said false tunnel or casing is secured, tracks arranged on the outwardly-extended ends of said cross-ties, and weighted cars for running on said tracks.

3. In a tunnel construction, an inflatable casing, cross-ties to which said casing is attached, weighting devices movable on said cross-ties, a permanent tunnel arranged within the false tunnel, and means for leveling said permanent tunnel.

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

DAVID PHILLIPS.

Witnesses:

W. B. LAMBDIN,
W. H. BECKWITH.