

No. 691,353.

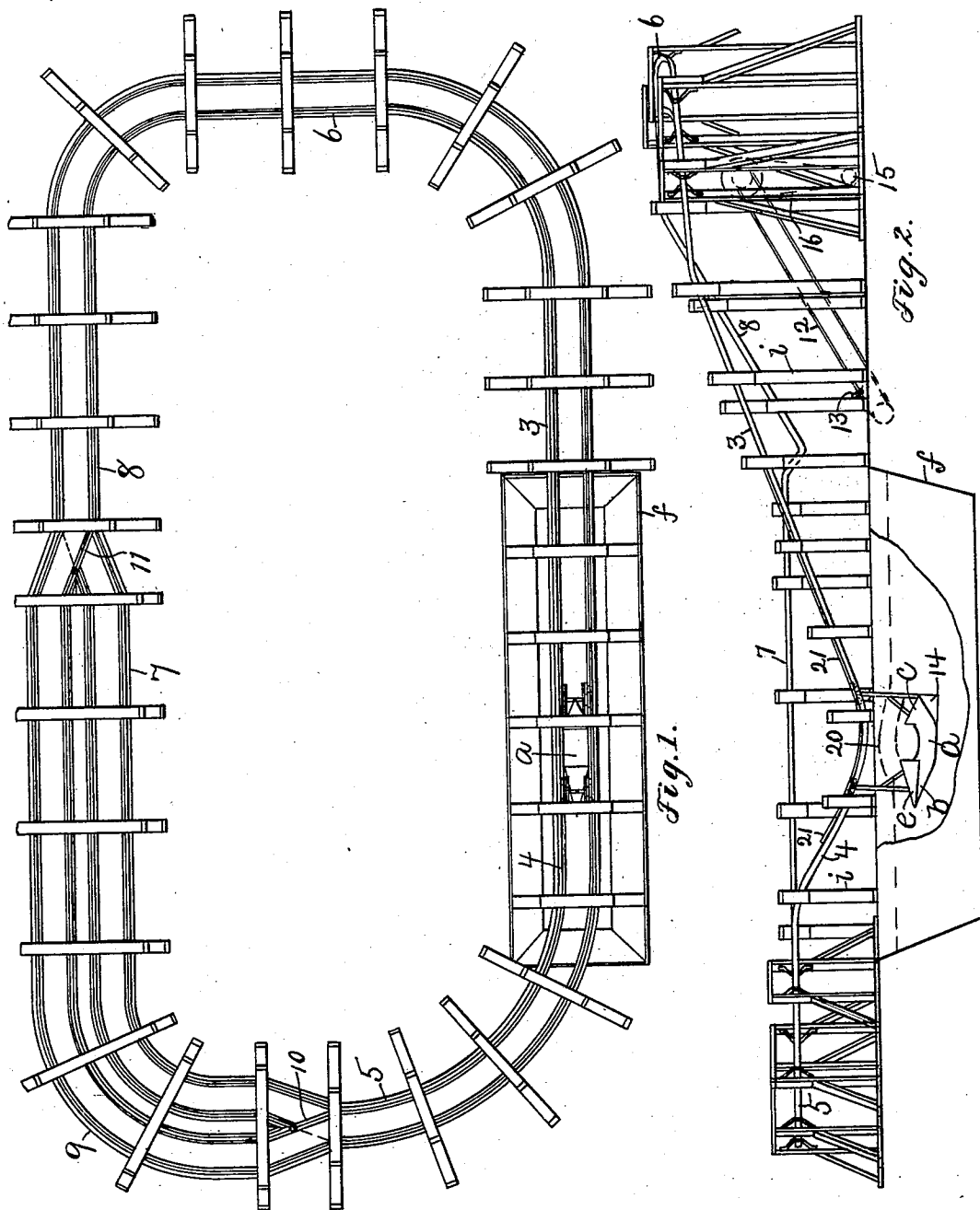
Patented Jan. 21, 1902.

L. A. CARPENTER & S. MAHONY.  
SUBMARINE BOAT.

(Application filed Apr. 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.  
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by Jas. H. Churchill  
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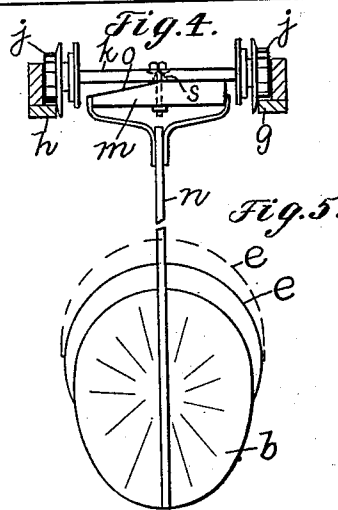
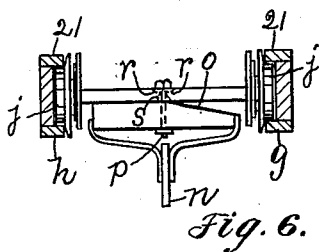
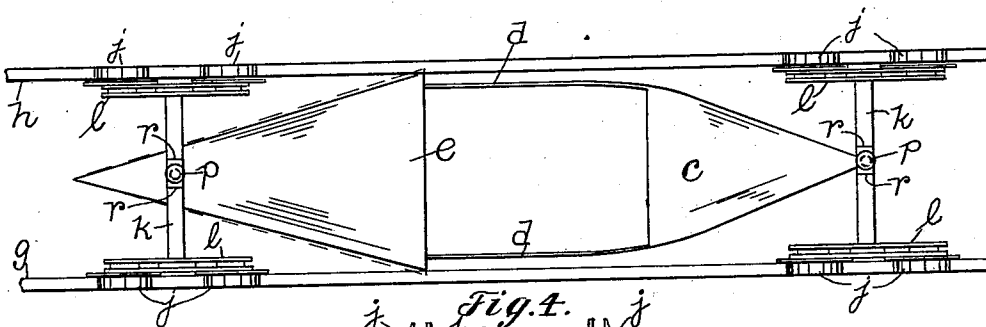
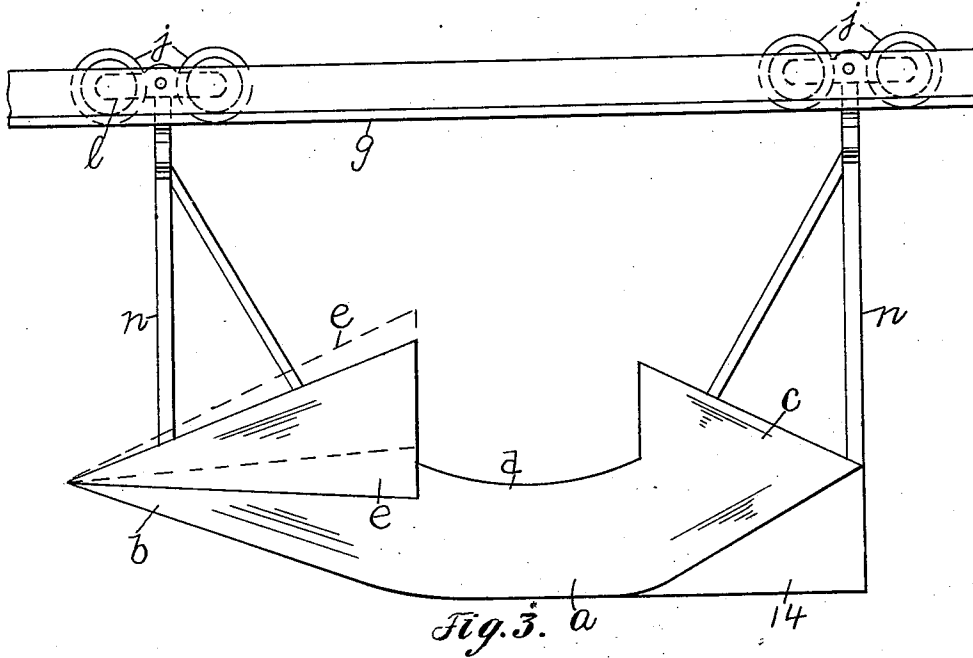
L. A. CARPENTER & S. MAHONY.

SUBMARINE BOAT.

(Application filed Apr. 6, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

LEWIS A. CARPENTER AND SAMUEL MAHONY, OF REVERE, MASSACHUSETTS.

## SUBMARINE BOAT.

SPECIFICATION forming part of Letters Patent No. 691,353, dated January 21, 1902.

Application filed April 6, 1901. Serial No. 54,662. (No model.)

*To all whom it may concern:*

Be it known that we, LEWIS A. CARPENTER and SAMUEL MAHONY, citizens of the United States, residing in Revere, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Submarine Boats, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention relates to a novel submarine boat or carrier especially designed and adapted to be used in connection with a body of water through which it is designed that the boat, which is open and constructed to carry passengers, should pass beneath the surface of the water without wetting the passengers or other contents of the boat. For this purpose the boat is provided with an open portion and in front of said open portion with means by which the water is caused to pass above and over the open portion of the boat when the latter is forced through the water below its surface. The boat is forced through the water at a speed or velocity sufficient to carry it through and out of the water before gravity has had time to act on the wave or portion of the water passing over the heads of the passengers in the boat. This velocity may be obtained in various ways; but we prefer to employ an elevated railway upon which runs a truck or trucks from which the boat is pivotally suspended, which railway as it approaches the body of water is given a sufficient inclination for the purpose stated. The boat may and preferably will be provided with a substantially tapering or conical bow constituting one form of means by which the wave is formed, and preferably it is also provided with a tapering or conical stern to prevent the water displaced by the boat from closing in too rapidly. The boat is suspended from its truck so as to be maintained in a substantially vertical position when traveling around curves. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a plan view of one form of apparatus embodying this invention; Fig. 2, a side elevation of the apparatus shown in Fig. 1 with the water-tank broken out; Fig. 3, a

side elevation, on an enlarged scale, of the boat shown in Fig. 1; Fig. 4, a plan view of the boat shown in Fig. 3; Fig. 5, an end elevation of the boat shown in Fig. 3 looking toward the right, and Fig. 6 a detail to be referred to.

In Fig. 3 is shown one form of a boat embodying this invention, it comprising a body portion *a*, provided with a substantially pointed or tapering bow *b* and a conical or tapering stern *c*. The body portion of the boat may and preferably will be made substantially circular in cross-section, and its upper portion is open for the reception of passengers. The upper portion of the conical bow *b* is made of a sufficient size to project beyond the sides *d* of the body portion, so as to form a deflector or shield *e*, which may and preferably will extend upward above the level of the upper edge of the stern portion *c* of the boat and which deflector or shield constitutes one form of means for forming a wave above the boat as the latter passes through the water. The boat shown in Fig. 3 is designed to carry passengers beneath the surface of a body of water in such manner that the occupants of the boat are not wet on the passage beneath the surface of the water. The body of water may be a natural or an artificial body, and is herein shown as contained in a tank *f*, open at its top and located in line with an elevated-railway structure, which may be of any suitable construction, and comprising in the present instance a continuous track composed of two substantially parallel rails *g h*, secured to suitable supports *i*. The rails *g h* form a track upon which run the wheels *j* of two trucks, which may be made as herein shown, (see Figs. 4, 5, and 6,) and each of which comprises a rigid axle *k*, upon the opposite ends of which are pivotally mounted wheel-carrying levers *l*, and to the center of which is pivotally secured a hanger-bar *m*, to which is secured a post or stanchion *n*, rigidly secured to the boat *a*. The hanger-bar *m* has its upper surface provided with an inclined portion *o*, extended from the center toward the end of the said bar, the inclined portion *o* on the front hanger-bar being on the opposite side of the center from the inclined portion of the rear hanger-bar, so that

in rounding the elevated curve in the track the rigid axles will engage the inclined surfaces of the hanger-bars, and the boat will be kept in a substantially vertical position, notwithstanding the fact that in ascending to or descending from the elevated curve the trucks are at different levels. The hanger-bars *m* are pivoted to the rigid axles by bolts *p*, which extend up through oblong slots *s* in the said axles, and the head *q* on said bolts rests on a raised point or pivot formed by recesses *r* in the upper surface of the rigid axle. The slots *s* in the axles are made of a width substantially equal to the diameter of the bolts to prevent movement of the hanger-bar in one direction and are made longer than said diameter to permit of movement in the opposite direction. The track is arranged above and in line with the open tank *f* and at such a distance therefrom that the boat will enter the water at or near one end of the tank, pass beneath the surface of the same, and then pass out of the water near the opposite end of the said tank, and in order to impart to the boat as it passes through the water the desired velocity a portion 3 of the track may be made substantially steep for a considerable length as it approaches the tank, and as it passes away from the tank a portion 4 of the said track is inclined, preferably for a shorter distance, but which is sufficient to elevate the boat out of the tank. The continuous track may be made of the shape represented in Fig. 1 and comprises the substantially circular end portions 5 6, situated at different levels, the end portion 6 being preferably higher than the end portion 5. The circular end portions 5 6 are connected at one side by the inclined portions 3 4 and at the other side by the substantially horizontal portion 7 and inclined portion 8, and, if desired, a turn-out portion 9 of track may be provided, which is controlled by switches 10 11.

In practice provision will be made for carrying the boat up the inclined portion 8, and in the present instance we have represented an endless conveyer 12, provided with a projection 13, which is adapted to engage the stationary portion 14 of the keel of said boat. The endless conveyer 12 may be operated from a shaft 15 by a belt or chain 16, (indicated by dotted lines,) and the shaft 15 may be driven by any suitable motor or engine. (Not herein shown.) The mechanism for carrying the boat up the incline 8 is conventionally shown, as it may be of any construction suitable for the purpose.

In operation the boat loaded with passengers is carried up the inclined portion 8 by the lifting apparatus and is released on the circular end portion 6, which is given a substantially slight inclination to start the boat on its way toward the tank. As the boat passes down the inclined portion 3 of the track it acquires a very considerable speed and enters the water in the tank *f* at a sub-

stantially high velocity, sufficient to carry it beneath the surface of the water and out again upon the circular end portion of the track without wetting the occupants of the boat. As the boat travels through the water below its surface the shield or deflector *e* forms what may be termed a "wave" above the boat, which wave is indicated by the dotted lines 20, Fig. 2. The shield or deflector, as above stated, may be stationary on the boat, as indicated by full lines, Figs. 3 and 5; but, if desired, it may be made adjustable, so as to cause the wave to pass over the heads of the occupants of the boat a greater or less distance, as desired. The adjustable shield or deflector is conventionally indicated by dotted lines, Fig. 3.

In order to prevent derailment of the trucks while the boat is passing through the water, the portion of the track above the body of water is provided with guard-rails 21, as represented in Fig. 6, between which and the main rails *g h* the wheels of the truck are confined while the boat is passing through the water. The remaining portion of the track may be provided with only the bottom rails, as shown in Fig. 5.

We have herein shown one form of boat which we prefer; but we do not desire to limit our invention to the particular shape shown. So, also, we have shown one means for imparting the desired velocity to the boat as it passes through the body of liquid; but we do not desire to limit ourselves in this respect, as other means may be employed—as, for instance, the boat might be drawn through the body of liquid or it may be attached to a swinging frame.

Believing ourselves to be the first to cause a boat open at its top for a portion of its length to pass beneath the surface of a body of water or other liquid and out therefrom without wetting the interior of the boat, whereby passengers in an open boat may be carried beneath the surface of a body of liquid without being wet, we do not desire to limit our invention to the particular mechanism shown for accomplishing this result.

We claim—

1. The combination with a body of liquid, of an elevated railway extended across said body of liquid and provided with inclined portions extending in opposite directions, one of said inclined portions having a pitch sufficient to cause a boat provided with an opening at its top and suspended from said railway to pass through said body of liquid at a velocity sufficient to prevent the said liquid entering the boat, said open boat, means for suspending the same from said railway a distance sufficient to cause it to pass beneath the surface of said body of liquid, and means on the boat to deflect the portion of the liquid above the boat backward and over the open portion of said boat, substantially as and for the purpose specified.

2. The combination with a body of liquid,

of a boat or carrier having an open portion and provided with means for forming a wave above the same, and means to cause the said boat or carrier to pass beneath the surface of the said body of liquid and out thereof, at a speed or velocity sufficient to prevent the liquid from entering the open portion thereof, substantially as described.

3. The combination with a tank open at its top and containing a body of liquid, of a boat having an open portion and adapted to enter said tank and pass beneath the surface of said body of liquid, means on the front end of said boat for forming a wave above the boat as the latter passes through the body of liquid, and means to cause the said boat to pass beneath the surface of the body of liquid at a velocity sufficient to prevent the liquid above the boat from entering the open portion thereof, substantially as described.

4. The combination with a tank open at its top and containing a body of liquid, of an elevated railway extended across and above said tank, a boat having an open portion and suspended from said railway, means on the front end of said boat for forming a wave above the boat, and means for causing said boat to

pass through said body of liquid below its surface at a velocity sufficient to prevent the liquid above the open portion of the boat from entering into the boat, substantially as described.

5. A boat of the character described, comprising an open body portion and a substantially conical or tapering bow, provided with a shield or deflector extended upward above and beyond the sides of the said body portion, substantially as described.

6. A boat of the character described, comprising an open body portion and a substantially conical or tapering bow, provided with a shield or deflector extended upward above and beyond the sides of the said body portion, and a substantially conical or tapering stern, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

LEWIS A. CARPENTER.  
SAMUEL MAHONY.

Witnesses:

JAS. H. CHURCHILL,  
J. MURPHY.