C. F. HENIS & C. F. PIKE.

SUBMARINE-BOAT.

No. 191,760. Patented June 12, 1877.

Fig 1

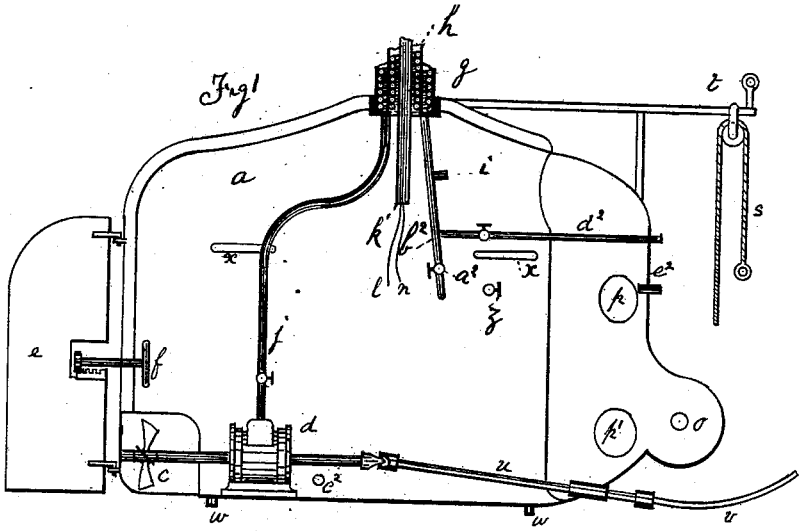
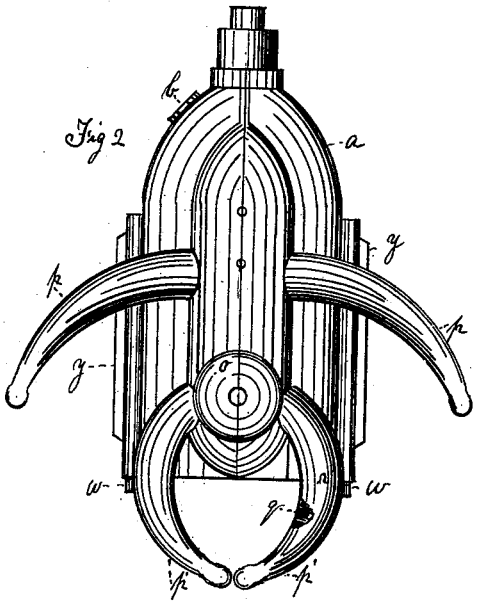


Fig 2



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UNITED STATES PATENT OFFICE.

CHARLES F. HENIS AND CHARLES F. PIKE, OF PHILADELPIA, PA.

IMPROVEMENT IN SUBMARINE BOATS.

Specification forming part of Letters Patent No. **191,760**, dated June 12, 1877; application filed October 6, 1876.

To all whom it may concern:

Be it known that we, CHAS. F. HENIS and CHAS. F. PIKE, of Philadelphia, State of Pennsylvania, have invented a Submarine Car, of which the following is a specification:

The object of our invention is to produce a submarine car, so constructed as to enable the diver to operate in deep water without exposing his person to the pressure of the water, and provide him with means to enable him to work successfully.

Figure 1 is a side elevation of the car, with one side removed, and a section of the air-pipes. Fig. 2 is a front elevation, with part of the covering removed from one arm, showing the metallic frame. The fall and flexible shaft (shown in Fig. 1) is omitted.

The shell of car *a*, Figs. 1 and 2, is made strong enough to resist the collapsing-pressure of the water, and is provided with a manhole, *b*, Fig. 2, for entrance and exit. It is propelled by the propeller *c*, Fig. 1, which is driven by the engine *d*, Fig. 1. Direction is given to the car by the rudder *e*, Fig. 1, which is controlled by the wheel *f*, Fig. 1. The air-supply is forced into the space between the tubes *g* and *h*, Fig. 1. This space is closed at the point of connection with the car, forming an air-chamber. The tubes *g* and *h*, Fig. 1, have spirally-wound wire within them, to prevent their collapsing. The tube *h*, Fig. 1, can be outside of the tube *g*, Fig. 1, if desired, making the air-space that much larger. Air for breathing is allowed to escape into the car through the pipe *i*, Fig. 1. The air to drive the engine is conveyed through the pipe *j*, Fig. 1. All exhaust-air passes up and out of the pipe *h*, Fig. 1. *k*, Fig. 1, is a speaking-tube. *l* and *n*, Fig. 1, are wires, to connect a battery above with electric lights, for illumitating.

On the bow are flexible arms *p p* and *p' p'*, Figs. 1 and 2. *o*, Figs. 1 and 2, is a projection for the head. The arms *p p* are constructed the same as those on the diving-suits now used. The arms *p' p'*, Fig. 2, have a metallic frame, *q*, on which is laid the water-proof covering *r*, protecting the diver from the pressure of the water. The frame *q* is composed of wire wound spirally, but rings or plates similar to those used in ancient armor can be used.

The diver lies down, placing his head in the projection *o*, and his arms in the flexible arms *p' p'*, giving them free motion to grasp any substance. In case of greater weight than one can lift, his companion assists by operating the fall *s*, Fig. 1, through the arms *p p*.

A buoy or float can be connected to the eye-bolt *t*, Fig. 1, to prevent tilting, if desired. His companion also controls the propelling and steering of the car, and regulates the motion of the shaft *u*, Fig. 1, on the end of which is attached the shaft *v*, Fig. 1, which can be either flexible or constructed with toggle-joints which can be placed in any position while in motion, operating any tool required. The rotary motion can be converted into a reciprocal, if necessary.

The adjustable legs *w w w w*, Figs. 1 and 2, are attached to the outside of the car, and are operated on the inside by the levers *x x*, Fig. 1, like a hydraulic jack. In case it is necessary to throw the bow down, to enable the diver to work to better advantage, the bow-legs are drawn up and the stern-legs forced out. To elevate the bow, the operation is reversed.

On the outside of the car are the compartments *y y*, Fig. 2, which are filled with water to sink, or air to float, the car, as may be desired. To fill the compartments with water, open the valve *z*, Fig. 1, which leads into the car, and the water will fill the compartment. When full, close the valve *z*. To fill the compartment with air, open the valve a^2, Fig. 1, in the pipe b^2, Fig. 1, which connects with the air-chamber. The air, being at a higher pressure than the water, will force the water out and occupy its place. Close the valve a^2 when the compartment is full. c^2 is a valve, leading out of the compartment into the water, to be closed in case of necessity. The amount of water or air can be regulated as desired.

d^2 and e^2, Fig. 1, are supply and exhaust pipes, to be used for operating a drill or other mechanism, or to fill floats outside of the car.

No claim is made for the body of the car, as various-shaped cars have been made.

What we claim is—

1. The metallic frame q, and water-proof covering r, forming the arms p' p', in combination with the car, substantially as shown and described.

2. The adjustable legs w w w w and levers x x, in combination with the car, substantially as and for the purpose set forth.

3. The flexible shaft v and shaft u, provided with means to give it motion, in combination with the car, as and for the purpose set forth.

4. The compartment y, valve z, pipe b^2, valve a^2, and air-chamber formed by the pipe g, in combination with the car, substantially as and for the purpose set forth.

5. The combination of the tube g with the spirally-wound wire, substantially as shown and described.

6. The tubes d^2 and e^2, in combination with the car, substantially as and for the purpose set forth.

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Witnesses:
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