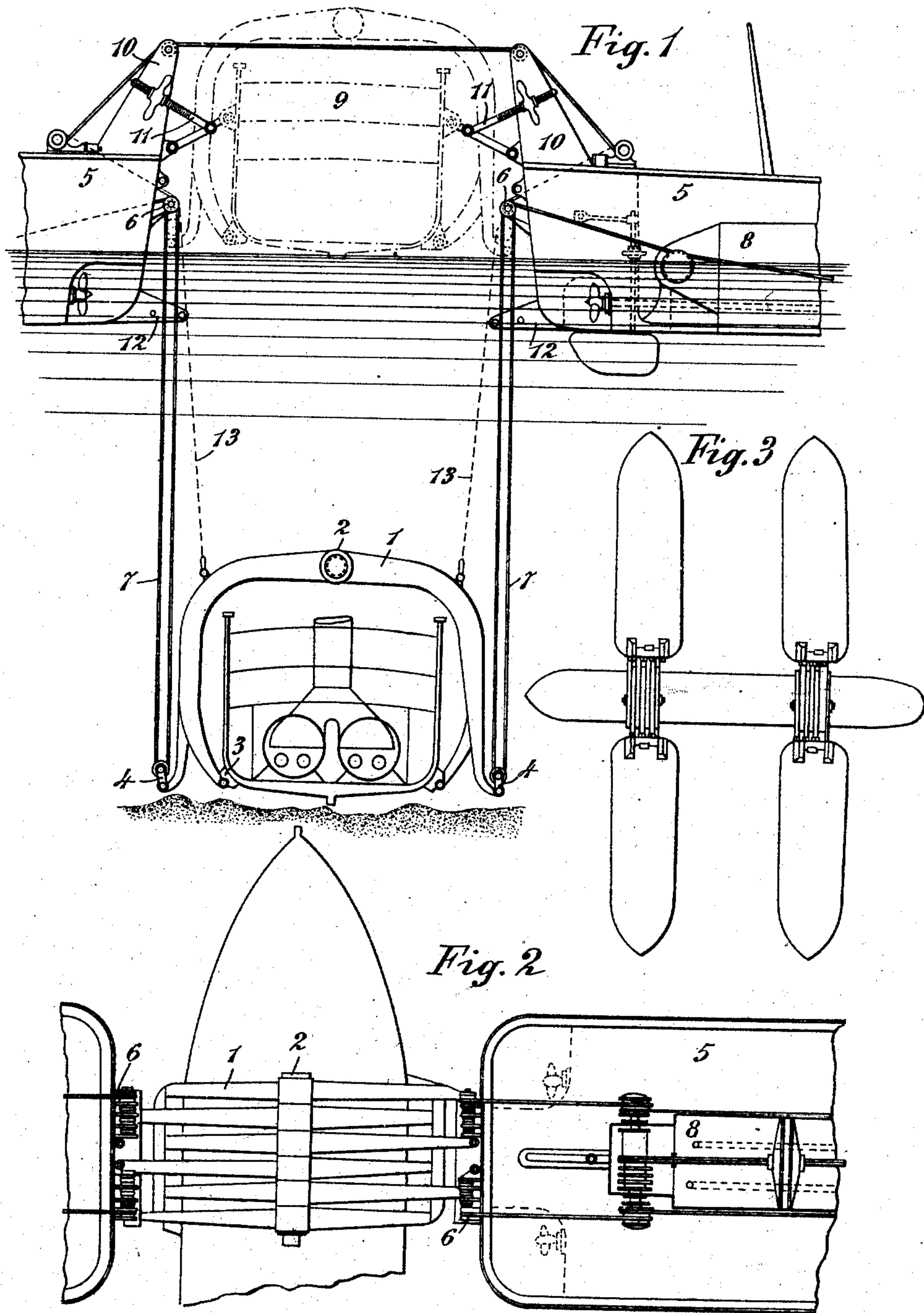


G. PINO.
 APPARATUS FOR ELEVATING SUBMERGED VESSELS.
 APPLICATION FILED OCT. 21, 1907.

928,536.

Patented July 20, 1909.



WITNESSES
 W. P. Buck
 G. Heerbrandt

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 Giuseppe Pino
 BY *[Signature]* ATT'Y.

UNITED STATES PATENT OFFICE.

GIUSEPPE PINO, OF GENOA, ITALY.

APPARATUS FOR ELEVATING SUBMERGED VESSELS.

No. 928,536.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed October 21, 1907. Serial No. 398,457.

To all whom it may concern:

Be it known that I, GIUSEPPE PINO, M. E., subject of the King of Italy, residing at Genoa, Italy, have invented certain new and useful Improvements in Apparatus for Elevating Submerged Vessels, of which the following is a specification.

The object of this invention is to provide an improved apparatus for elevating submerged vessels, as shown in the annexed drawings where—

Figure 1 is a diagrammatical longitudinal section of apparatus, Fig. 2 a sectional plan, Fig. 3 is a diagrammatical view of a sunken vessel being elevated by four pontoon vessels.

The present system of grappling and re-floating submerged vessels consists especially in a series of levers (1), in the form of an inverted U, pivoted at the center (2) and bearing at one extremity supporting plates (3) and at the other opposite extremity supporting pulleys (4). These levers are arranged alternately in transverse direction upon the hulls to be recovered, forming groups which may be composed of a number of different elements.

In the drawing groups are represented of six elements. Each forms a kind of great tongs or clutch suspended from the recovering pontoons (5). The supporting pulleys (4) of the levers are combined with other pulleys 6 attached to the pontoons (5) in a manner to form pulley systems which multiply the force available on board and therefore the number of the suspension cables (7). The force of elevation is obtained by cylinders (8) or by capstans or by any other means employed in the industrial field.

The attachment of the cables to the levers, their form and their arrangement is such that the submerged hulls grappled with this system can be raised completely out of the water, as shown at 9 in dotted lines, Fig. 1. The pontoons are furnished with small towers (10) with screw levers and supports (11) which serve to keep the hull raised, in a vertical position, and lower down with supports (12) for the suspension cable.

Fig. 3 represents the entire arrangement of the pontoons and the grapples for the raising of a steamboat. When the grapples are lowered to the bottom they are suspended on cables 13, which hold them open to seize the submerged vessel.

Having now fully described my said invention and the manner in which the same is to be performed, what I claim and desire to secure by Letters Patent of the United States is:

An apparatus for raising sunken vessels, comprising a series of inverted U shaped levers pivoted together midway of their ends, a block on one end of each lever adapted to engage the sunken vessel, a pulley on the other end of each lever, said pulleys and blocks being alternately located on the levers and means for engaging with the pulleys for raising and lowering the levers.

In testimony whereof I have affixed my signature in presence of two witnesses.

GIUSEPPE PINO.

Witnesses:

ANGELO BORAGINO,
A. FERRARI.