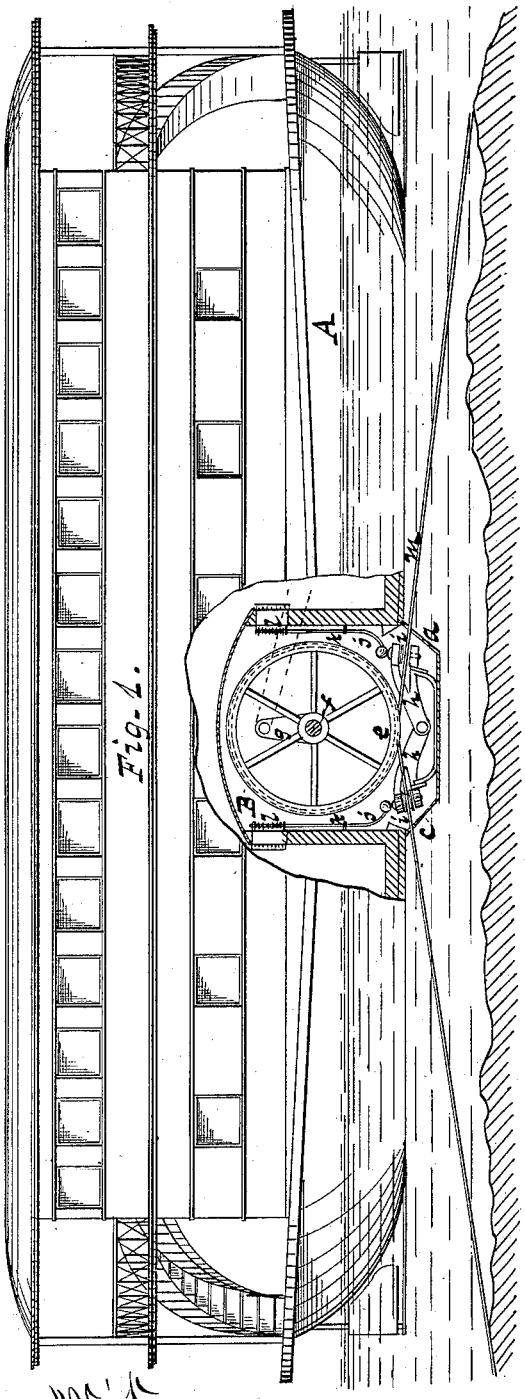
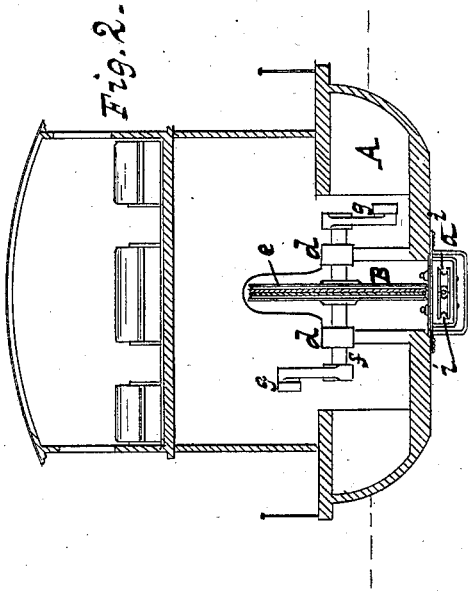
(No Model.)

D. L. MASTERS.

PROPULSION OF BOATS.

No. 304,742. Patented Sept. 9, 1884.





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UNITED STATES PATENT OFFICE.

DAVID L. MASTERS, OF BRADDOCK, PENNSYLVANIA.

PROPULSION OF BOATS.

SPECIFICATION forming part of Letters Patent No. 304,742, dated September 9, 1884.

Application filed January 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, D. L. MASTERS, a citizen of the United States, residing at Braddock, in the county of Allegheny and State of Pennsylvania, have made a new and useful invention relating to boats or vessels propelled by means of a chain or cable extending along the bottom of the river or water bed, and about a drum in the boat in such a manner as that a rotation of said drum shall cause the boat to be drawn through the water at a speed depending on the revolutions of the drum, and in a direction corresponding to the length of the cable.

The improvement I have made consists in such a construction of the bottom of the boat as to afford the cable an easy passage-way through it to and from its actuating mechanism, and in combination therewith the peculiar construction of the several operative parts used for the purpose of guiding said cable into and out of the boat, which will be readily understood from the following description, taken in connection with the accompanying drawings, wherein—

Figure 1 represents a passenger-boat having a portion of its side removed to exhibit the arrangement of the cable therein, together with its drum and guides; Fig. 2, a transverse vertical section of the same; Fig. 3, an end view of that portion of the boat through which the cable enters or leaves.

The boat to which my invention is applicable may be designed and constructed for the transportation of passengers or freight, and fitted for those purposes with all the appendages incident thereto; but in order to accomplish the object of my invention and draw boats either forward or backward through water by means of a chain or cable made fast at each end to opposite shores and extending loosely between them along and underneath the water, I provide the boat A with a stout water-tight compartment, B, centrally located inside the vessel and upon the floor of its hull, which has an opening downwardly through it of corresponding size, on the under side of which is rigidly affixed an oblong iron shield, *a*, provided at each end with a circular hawse-hole, *c*, sufficiently large to permit a chain or cable of proper strength to pass through without interference.

Supported in suitable bearings, *d*, within the upper compartment, B, is placed a large wheel or grooved pulley, *e*, the axis *f* of which is arranged transversely to the length of the vessel, and provided with cranks *g*, for giving a rotary movement thereto by means of properly-applied power.

Beneath the main wheel *e*, but having no immediate connection therewith, are a pair of stout arms, *h*, pivoted together at a common center in such a manner as to admit of an up-and-down movement. Each of these arms *h* is fitted at its extremity with two sheaves or small guiding-wheels, *i*, and in addition thereto with a rod, *j*, that extends upwardly through suitable eyebolts, *k*, and encircled at or near its top with a strong spiral spring, *l*, whereby a downward pressure is maintained on each of the respective arms.

The several parts having been constructed, combined, and arranged with relation to each other and the boat as shown and described, a strong chain or cable, *m*, of proper size and length, is to be passed through one of the circular holes in the iron shield *a*, then between the sheaves *i* in that end of the nearest arm, *h*, thence up over and entirely around the periphery of the main wheel *e*, then between the sheaves *i* of the other arm, *h*, and eventually out through the hole *c* in the opposite end of the iron shield *a*, and each extremity of the cable *m* made securely fast to or near the shore, and in such a manner as to admit of its body resting along the bottom of the river or lake with sufficient freedom to accommodate itself to any irregularities therein, whereupon, if the main wheel *e* be rotated, one portion of the cable *m* will be raised and passed around the wheel by a regular, steady, and progressive motion, and as gradually discharged in an opposite direction, whereby the boat will be moved along by the traction of the wheel upon the cable at a speed proportioned to the number of its revolutions and the extent of its diameter. As the cable enters and leaves the boat on its way to and from the wheel, it is properly guided by the sheaves *i i*, and held tightly to the wheel by the downward pressure of the

arms *h*, assisted in that respect by the spiral springs *l* around the vertical rods *j*, connected therewith. By this means the cable is always held taut and prevented from slipping or getting off the wheel in consequence of undue surging or violent movement of the boat, and the effect will be the same upon the vessel going in either direction, a change in which that may be readily brought about by simply reversing the action of the main wheel.

Having thus described my invention, I claim—

1. As a means for the propulsion of boats, a traction-wheel, *e*, over and around which passes a chain or cable, *m*, that reaches outside of the boat, and along the bottom of the water, in combination with the pivoted arms *h h*, beneath the wheel, having in their extremities two sheaves, *i i*, pressed downwardly by means of vertical rods *j j*, surrounded by spiral springs *l l*, in the manner shown and set forth.

2. In a boat, the combination of the interior compartment, B, to the bottom of which is attached an iron shield, *a*, provided with holes *c*, an inside traction-wheel, *e*, the pivoted arms *h*, in the extremities of which are two sheaves, *i i*, pressed down upon a cable, *m*, by means of vertical rods *j* and spiral springs *l*, arranged around them in the manner shown, for the purposes set forth.

DAVID L. MASTERS.

Witnesses:
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