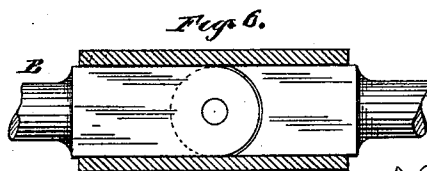
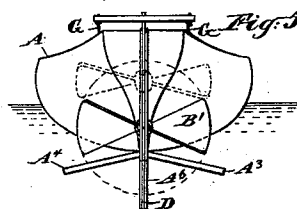
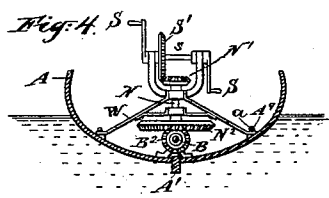
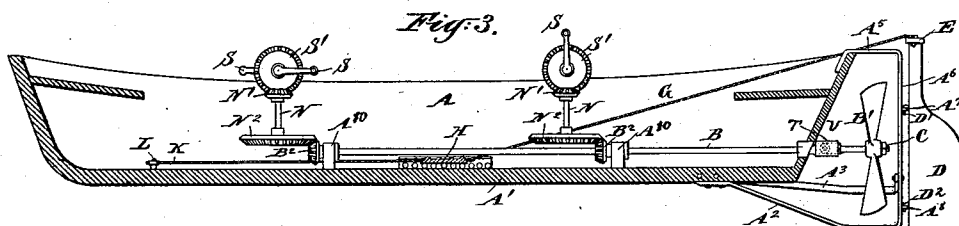
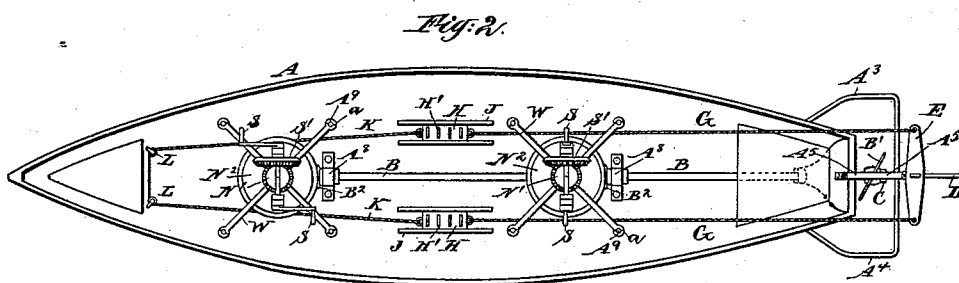
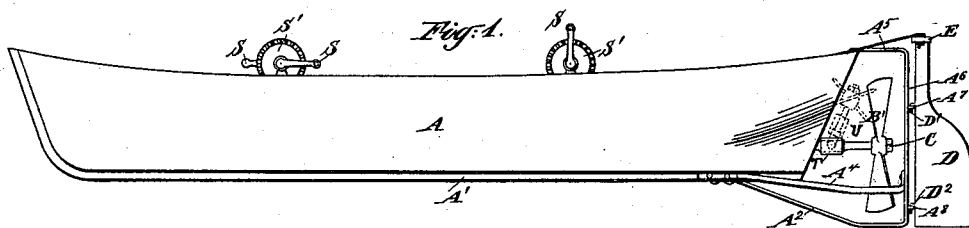


(No Model.)

J. SAVAGE.
BOAT.

No. 478,763.

Patented July 12, 1892.



Witnesses:
Charles H. Searle,
M. F. Boyle.

Inventor:
James Savage
by his attorney
James S. Watson

UNITED STATES PATENT OFFICE.

JAMES SAVAGE, OF CANARSIE, NEW YORK.

BOAT.

SPECIFICATION forming part of Letters Patent No. 478,763, dated July 12, 1892.

Application filed July 7, 1891. Serial No. 398,656. (No model.)

To all whom it may concern:

Be it known that I, JAMES SAVAGE, a citizen of the United States, residing at Canarsie, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Boats, of which the following is a specification.

The invention pertains to means for propelling and steering and may apply to small craft of many styles. I esteem it particularly applicable to pleasure-boats. There have been many efforts to operate small boats by screw-propellers worked by the muscles of one or more persons in the boat. The screw-propeller being of small area acted on only a small surface of the water and made much slipping by reason of the small quantity of water acted on, being easily pushed away, instead of expending the force in driving the boat forward. My invention avoids these objections. I arrange for employing a large screw and taking hold of a greater quantity of water than usual. I attain this by letting the propeller extend upward above the water-surface and below the bottom of the keel. I guard efficiently against the ordinary difficulties experienced with such when moving into shallow water or lying aground.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation of a boat having my invention. Fig. 2 is a plan view. Fig. 3 is a longitudinal vertical section. Fig. 4 is a transverse vertical section. Fig. 5 is a rear view. The remaining figures are on a larger scale and show portions detached. Fig. 6 is a section, partly in elevation, showing a portion.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the hull of the boat, of any ordinary or suitable pattern, certain portions being designated when necessary by super-numerals, as A'. It may have rowlocks, allowing it to be propelled by oars when for any reason such may be desired.

A' is the keel. A series of curved braces A² A³ A⁴ are firmly fixed to the keel and extend rearward, downward, and also to a suf-

ficient extent laterally to shield the large screw-propeller employed and defend it against contact with the bottom in any emergency.

B is the screw-shaft lying near the keel in the interior and extending out through a properly-packed bearing in the stern near the bottom and carrying a large light screw-propeller B', mainly of rolled brass or other sheet metal having an unoxidizable surface. The hub of the propeller, which is of cast-brass, is screw-threaded upon the shaft like a nut and is locked by a jam-nut C. Above the propeller a rigid brace A⁵ extends from the hull A rearward. This brace A⁵ and the lower brace A² are connected by a vertical bar A⁶, the front edge of which may be sharpened to facilitate the movement through the water, and the rear edge of which carries two eyes A⁷ A⁸, which receive the ordinary rudder-braces D' D² on the front edge of the rudder D. My rudder acts on a large surface of the water. The upper end of the rudder carries a removable cross-tiller E, sometimes called a "tiller-head." From each end of this cross-piece cords G G, of manila or other suitable material, extend forward and downward to a corresponding slide H, which is fitted to traverse in ways extending fore and aft. The propeller-shaft B extends nearly or quite the whole length of the boat near the keel, supported by suitable brackets A¹⁰. Near each bracket is a bevel gear-wheel B³, which is engaged, when required, by a horizontal bevel gear-wheel N², fixed on an upright shaft N, rotated by two hand-cranks S on the horizontal shaft s, operated by one or more persons and connected by suitable gearing S' and N'. Each entire set of crank mechanism is supported in a frame W, which can be easily inserted in the boat and removed as required. It is held when in use by eyes A⁹, fixed in the boat and received in slots in the framing and secured by keys a. When the boat is to be used with oars, these keys are liberated and each frame W and its cranks S, upright shaft N, and gearing N' N² are removed from the boat, the propeller B' being readily disconnected by removing the nut C and revolving the shaft and unscrewing it. When this is done, the boat is reduced to an ordinary boat, with my steering mechanism alone available. When it is

desired to operate by one or more of the crank mechanisms, such are taken from the boat-house and secured in place in the boat, and the propeller being again set on the shaft and secured by the nut C all is ready for work. There is a hinge T in the propeller-shaft, and when the propeller is retained, but propulsion through this agency is not required, the hinge is made flexible and the propeller is elevated and turned so that its two wings extend horizontally above the surface of the water, and the boat may then be worked by oars or sails. When it is again desired to impel the boat by the propeller, the hinge is straightened and a sleeve U is moved into position to stiffen the hinge. The tiller-head may be removed from the rudder and the rudder may be unshipped by lifting it, and both taken into the boat or otherwise disposed of when required. I do not in this application claim mechanism for operating the rudder. Such is made the subject of a separate application for patent, filed October 22, 1891, Serial No. 409,474. Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The boat may be equipped for receiving one or more masts, so as to be aided by sails, if desired. I claim as my invention—

1. The hull A, shaft B, extending out at the stern near the bottom, gears S', carried on horizontal shafts, and vertical shafts N and gears N' thereon, and gears connecting such shafts with the propeller-shaft, in combination with each other and with the two-bladed screw B', arranged to sweep below the keel proper and operated by a shaft B, having a hinge-joint T, adapted to allow the screw to be raised and lowered, and the sleeve U, sliding on the shaft for stiffening such joint when required, arranged for joint operation as herein specified.

2. A detachable frame W, with provisions for securing and detaching it at will in the interior of the hull A, transverse shafts, carried therein, with gear S', hand-cranks S, and an upright shaft N and gears N' N² thereon, in combination with the longitudinal shaft B, supported in bearings near the bottom of the boat and having a screw-propeller and a hinge-joint outside with means for stiffening the joint, and a gear-wheel B², engaged with the gear N², arranged for joint operation as herein specified.

3. In apparatus for the propulsion of boats, the two-bladed screw B', arranged to sweep below the keel proper and operated by a shaft N, having a hinge-joint T to allow the screw to be raised and lowered, and means for stiffening such joint when required, in combination with each other and with the series of longitudinal guards A² A³ A⁴, extending below the keel, all arranged for joint operation as herein specified.

4. In apparatus for the propulsion of boats, the two-bladed screw B', arranged to sweep below the keel proper and operated by a shaft N, having a hinge-joint T to allow the screw to be raised and lowered, and the sleeve U for stiffening such joint when required, in combination with each other and with the series of longitudinal guards A² A³ A⁴, extending below the keel, and an upright portion A⁶, carrying hinge-joints A⁷ A⁸, connecting a rudder D in rear of the whole, all arranged for joint operation as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JAMES SAVAGE.

Witnesses:

CHARLES R. SEARLE,
M. F. BOYLE.