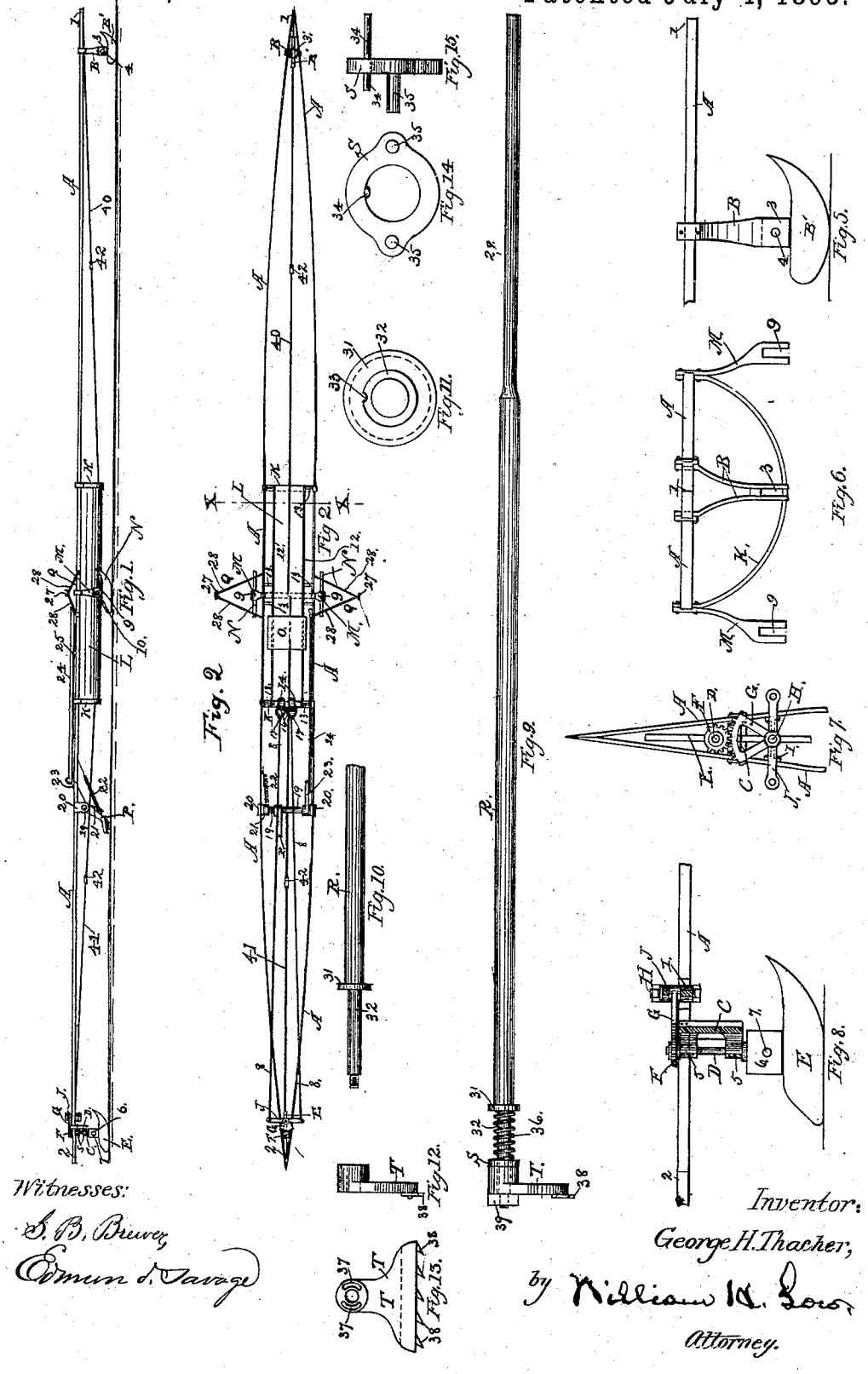
(No Model.) 2 Sheets—Sheet 1.

G. H. THACHER.

OAR PROPELLED ICE BOAT.

No. 500,826. Patented July 4, 1893.



Witnesses:
S. B. Brewer,
Edmund d. Savage

Inventor:
George H. Thacher,
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Attorney.

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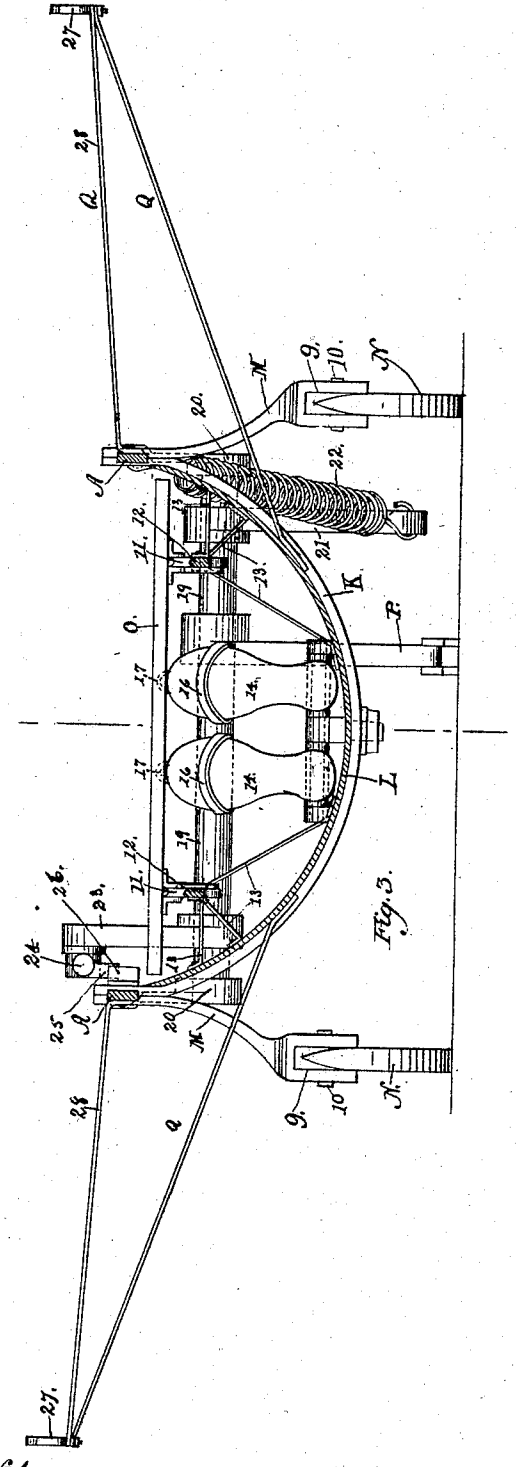


Fig. 3.

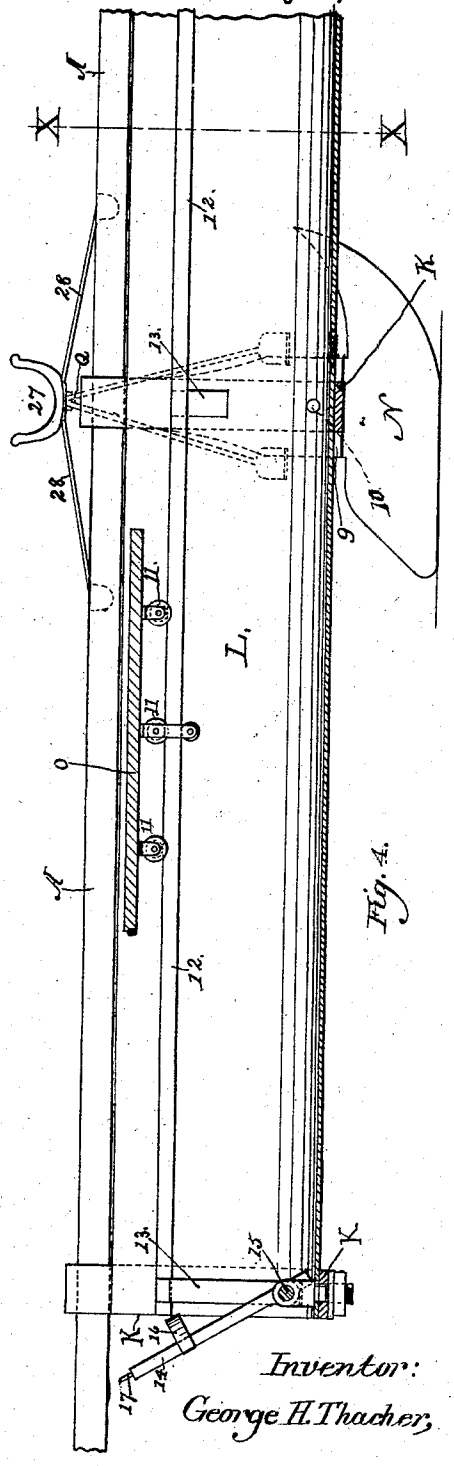


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE H. THACHER, OF ALBANY, NEW YORK.

OAR-PROPELLED ICE-BOAT.

SPECIFICATION forming part of Letters Patent No. 500,826, dated July 4, 1893.

Application filed February 15, 1893. Serial No. 462,373. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. THACHER, of the city and county of Albany, in the State of New York, have invented new and useful Improvements in Oar-Propelled Ice-Boats, of which the following is a specification.

My invention relates to an exercising apparatus for oarsmen to be used in the winter season, when, by reason of frozen streams, practice in rowing-boats in the water is of necessity suspended, my ice-boat being adapted to afford all the different manipulations required to propel an ordinary racing-shell-boat through the water, and, being used in the open air and propelled over the ice, possessing many advantages over the usual practice-boat, held in a fixed position, in a water-tank.

To this end my invention consists of a skeleton form which simulates the shape, but more particularly the outline, of a shell racing-boat, with outriggers for sweeps or sculls, sliding-seat for the oarsman, and a steering-mechanism operated by the feet of the oarsman.

In the accompanying drawings, which are herein referred to and form part of this specification, Figure 1 is a side elevation of an ice-boat embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged transverse section at the line X X. Fig. 4 is an enlarged longitudinal section of the central portion of my ice-boat. Fig. 5 is a side elevation of a portion of the bow of my ice-boat. Fig. 6 is a front elevation of the frame of my ice-boat, with the outriggers, runners, and other details omitted therefrom. Fig. 7 is a plan view of the stern portion of my ice-boat, showing the steering-gear for the same. Fig. 8 is a side elevation—partially in section—of Fig. 7. Fig. 9 is an enlarged side elevation of one of the sweeps with its spur-piece attached. Fig. 10 is a side-elevation of the outer end of the sweep without its spur-piece. Fig. 11 is an enlarged end elevation of Fig. 10. Figs. 12 and 13 are respectively a side elevation and a rear elevation of a spur-piece detached from its sweep; and Figs. 14 and 15 are respectively a front elevation and a side elevation of a clutch for connecting the spur-piece with a sweep, so as to allow the outer end of the latter to pass through the arc of a circle while the spur-piece is maintained at a constant distance from the center line of the ice-boat while the latter is being propelled by the sweeps.

As represented in the drawings, my ice-boat consists of a gunwale, or top-frame, A, which is formed of metallic bars connected together at each end by rivets, bolts or other suitable means; preferably said bars are connected to form a sharp point at each end, similarly to the bow and stern of a shell-boat, the bow of my ice-boat being designated by 1, and the stern of the same by 2. Near the bow there is a hanger or strut, B, which is secured to both bars of the top-frame A, so as to spread said bars apart to a distance that will conform to the contour of said top-frame at the point to which said hanger is attached. The two parts of said hanger are joined to form a single arm near its lower end, and a jaw, 3, is formed at its lower end to receive a bow-runner, B′, which is pivoted, as at 4, to allow a slight rocking movement to said runner while passing over ice having a rough surface. Near the stern another hanger or strut, C, is secured to both bars of the top-frame A, so as to spread said bars to a proper distance apart; said hanger is provided with bosses, 5, which form journal-boxes for a vertical shaft, D, which is provided with a jaw, 6, at its lower end, and in said jaw a steering-runner or rudder, E, is pivoted, as at 7, so that the steering-runner can acquire a slight rocking movement while passing over ice which has a rough surface. To the upper end of the shaft D a pinion, F, is secured; said pinion meshes into gear with a segmental-gear, G, secured to a shaft, H, that is journaled in a cross-piece, I, secured to the opposite bars of the top-frame A. A yoke, J, is also secured to the shaft H, so as to attach steering-ropes or rods, 8, to the opposite end of said yoke for the purpose of turning the rudder E in any required direction to steer the boat upon any course desired. Midship frames, K, are secured to the bars of the top-frame A so as to spread said bars to a required distance apart; preferably three of said midship frames are employed to carry a midship-section, L, usually made in a trough-like form open at each end. One of said midship frames is arranged at each end of the

midship-section L, and the third one is arranged at the middle of said section. To the middle midship frame a hanger, M, is secured at each side of the ice-boat, said hanger having at its lower end a jaw, 9, for carrying a midship-runner, N, which is pivoted, as at 10, in said jaw, so that said runners can acquire a slight rocking movement while the ice-boat is passing over rough surfaces of ice. A sliding-seat, O, is provided with anti-friction rollers, 11, which are fitted to run on tracks, 12, which are secured to the midship-section L by means of brackets, 13, in parallel lines with each other. Two independently-moving foot-boards, 14, are arranged at a convenient distance from the seat O, and are fixed on a shaft or shafts, 15, so as to receive tilting motions in opposite directions; each of said foot-boards is provided with a strap, 16, fitted to pass over the foot of the oarsman for the purpose of effecting the tilting movement of the foot-board toward the bow of the ice-boat; the upper end of each foot-board is provided with an eye, 17, to which is attached one end of a tiller-connection 8, the opposite end of the latter being secured to a corresponding end of the yoke J for the purpose of imparting the required motion—acquired from the foot-boards 14—to the rudder E, as occasion may require. A spurred-lever, P, is secured to a rocker-shaft, 19, and is arranged to form a drag upon the surface of the ice, so as to check or stop the motion of the ice-boat when occasion requires; said shaft is journaled in brackets, 20, secured to the top-frame A. An arm, 21, on said shaft is connected with a spring, 22, in such manner that the spurred end of the lever P can thereby be depressed to bear upon the surface of the ice with sufficient tenacity to effect the stoppage of the boat. An arm, 23, secured to said shaft, has an operating-rod, 24, jointed to its upper end, said rod being arranged to impart a rocking motion to the shaft 19, against the resistance of the spring 22, and it is provided with a lug, 25, fitted to engage in a notch formed in a bar, 26, secured to the top-frame A.

At opposite sides of the boat, practically abreast of the middle midship frame K, an outrigger, Q, extends laterally, and the outer end of each outrigger is provided with a rowlock, 27, fitted to receive a sweep that is used for propelling my ice-boat. Braces, 28, extending diagonally from the outer end of each outrigger to the top-frame A, afford suitable fore-and-aft support to the outer end of each outrigger to enable it to withstand the strain thrown upon it.

R designates a sweep used for propelling my ice-boat; said sweep has a handle, 29, formed at one end, and the opposite end, which is preferably reduced in diameter, carries the spur-piece T. A collar, 31, or other suitable shoulder, is made at the point where the body of said sweep is reduced in diameter, and the reduced portion 32, has a longitudinal groove, 33, as shown in Fig. 11, formed for a purpose shortly explained. A clutch or coupling, S, is fitted to slide loosely on the portion 32 of the sweep R and it is provided with a feather, 34, which will slide freely in the groove 33 of said sweep; said feather, while it allows a free sliding motion longitudinally on said sweep, will prevent the clutch S from acquiring a rotative motion; said clutch is provided with pins, 35, or other suitable means for effecting an engagement with the spur-piece hereinafter described. A spring, 36, is interposed between the collar 31 and clutch S for the purpose of keeping the latter normally forced toward the outer end of the sweep R, said spring permitting the outer end of the sweep to move in the arc of a circle while the clutch S is maintained constantly at a uniform distance from the center line of my ice-boat while the sweep is being moved to propel the ice-boat forward. The spur-piece T is loosely fitted on the outer end of the sweep R, and it is provided with segmental slots, 37, in which the pins 35—of clutch S—will take in such manner that the sweeps R can be "feathered" after the manner of feathering oars while rowing in water. The spur-piece T is provided with spurs or teeth, 38, which are preferably inclined toward the stern of the ice-boat, when in use, for the purpose of affording a more effective bite on the ice and to facilitate their releasement from the ice as the sweeps commence to move the spur-pieces toward the bow of the ice-boat. A nut, 39, secures the spur-piece to the sweep R in such manner that said spur-piece will be prevented from slipping off the outer end of the sweep.

When required, additional strength can be given to my ice-boat by means of tie-rods, 40 and 41, the first of which extends from the midship-section L to the bow of the ice-boat, and the other extends from said midship section to the stern of the ice-boat; each of said tie-rods is provided with a right-and-left screw-nut, 42, or other similar provision, for adjusting the length of said tie-rods as occasion may require.

My invention is operated in the following manner: The oarsman seated on the sliding-seat O with his feet engaged under the straps 16—the sweeps R being in the rowlocks 27—in throwing the outer end of said sweeps ahead will draw the sliding-seat toward the stern of the ice-boat, in imitation of an oarsman rowing a shell-boat in water. When the outer end of the sweep has attained the limit of its forward movement it is depressed to allow the teeth of the spur-piece T to bite into the surface of the ice. In making the return of the sweeps, the oarsman—by pushing with his feet against the foot-boards 14—forces the seat toward the bow of the boat, thereby enabling him to obtain a longer movement of the sweeps. It is obvious that when the teeth of the spur-piece T have become engaged in the ice said spur-piece cannot follow the curved path in which the outer end of the sweep is forced to move. Consequently pro-

vision must be made to allow said spur-piece to remain at a uniform distance from the center line of the ice-boat while the sweep is pulled to propel the ice-boat in a forward direction, and for this purpose the spur-piece is fitted to slide inwardly and outwardly on the sweep, the inward movement being made against the resistance of the spring 36—which will be compressed during said movement, and the outward movement being effected by the resilient action of said spring. By means of the clutch S and the segmental slots 37, the oarsman can impart a feathering movement to his sweep in simulation of the act of feathering an oar in water. By means of the independently-acting foot-boards 14, the rudder E can be moved into any required angle in respect to the center line of the ice-boat, and thereby the latter can be caused to travel in any preferred direction. By means of the spurred-lever P, the headway of my ice-boat can be checked, or entirely stopped, as occasion may require.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A skeleton ice-boat adapted to be propelled by means of sweeps, the same consisting of a top-frame formed by metallic bars which are connected—side-by-side—at their ends, a strut secured to said top-frame and arranged to spread said bars apart, a bow-runner fixed to the lower end of said strut, a midship-frame provided with midship-runners arranged at each side of the ice-boat; said midship-frame being secured to said top-frame and formed to spread the bars of the latter apart to their greatest distance, an open-ended trough-like midship-section containing an oarsman's-seat, outriggers extending laterally from said midship-section and provided with rowlocks, a strut secured near the stern end of said top-frame, a steering-runner journaled in said strut, and independently-moving foot-boards pivoted to said midship-section and connected to said steering-runner, substantially as shown and described.

2. In an ice-boat propelled by sweeps, the combination of an oarsman's seat, a pair of foot-boards arranged to tilt independently of each other, a steering-runner having a pinion on its shaft, a quadrant-gear meshing into said pinion and provided with a cross-yoke, and connections from each end of said yoke leading to the corresponding foot-board, as and for the purpose herein specified.

3. As a means for propelling ice-boats, a sweep provided with a spring-controlled spur-piece provided with teeth which are adapted to engage in the surface of the ice; said spur-piece being fitted to slide loosely on the outer end of said sweep, as and for the purpose specified.

4. The combination of an ice-boat, a spring-actuated spurred-lever, and an operating-rod connected with said spurred-lever and provided with means — substantially as described—for holding the spurred end of said lever clear from the surface of the ice, as and for the purpose specified.

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Witnesses:
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