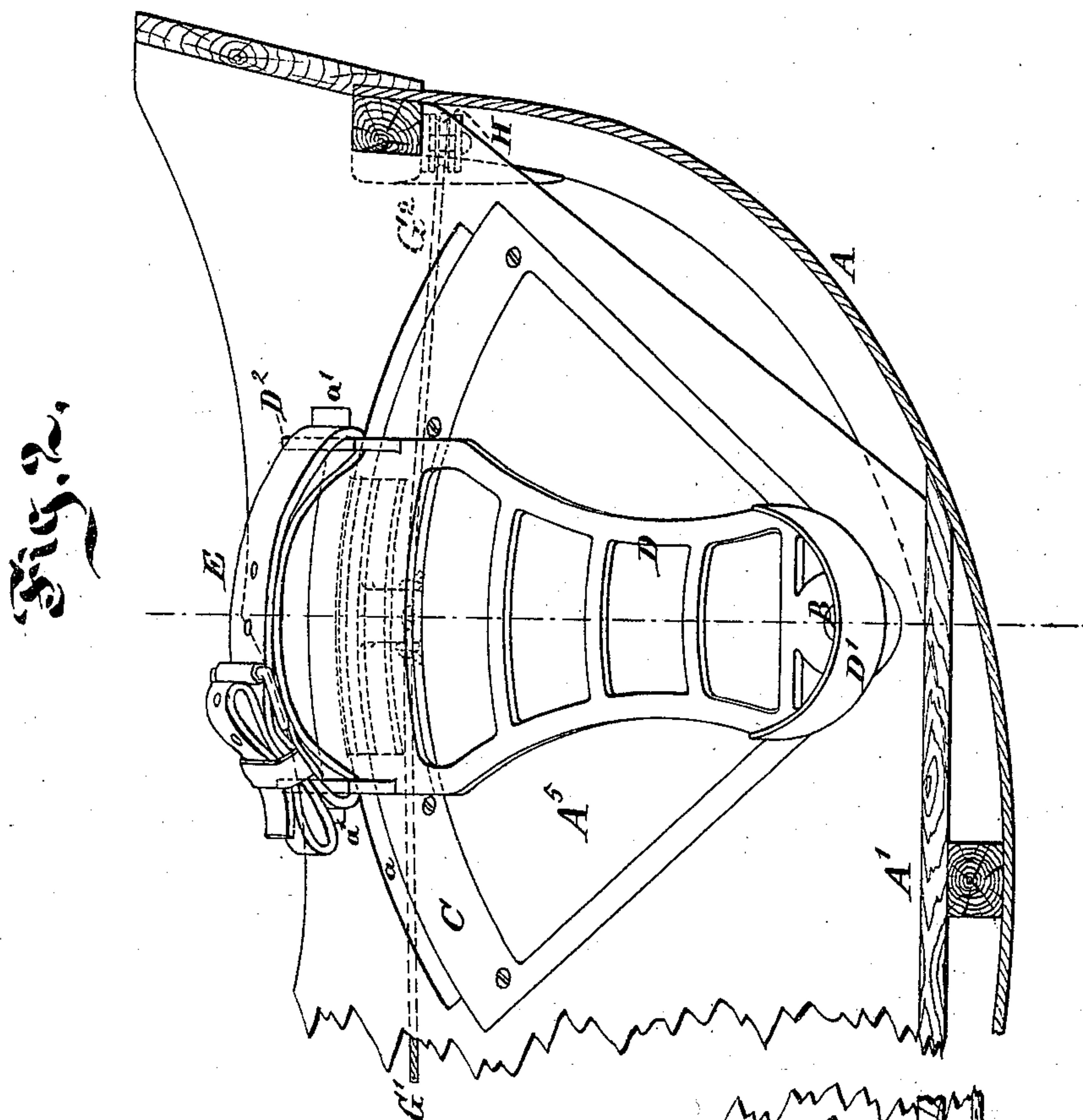


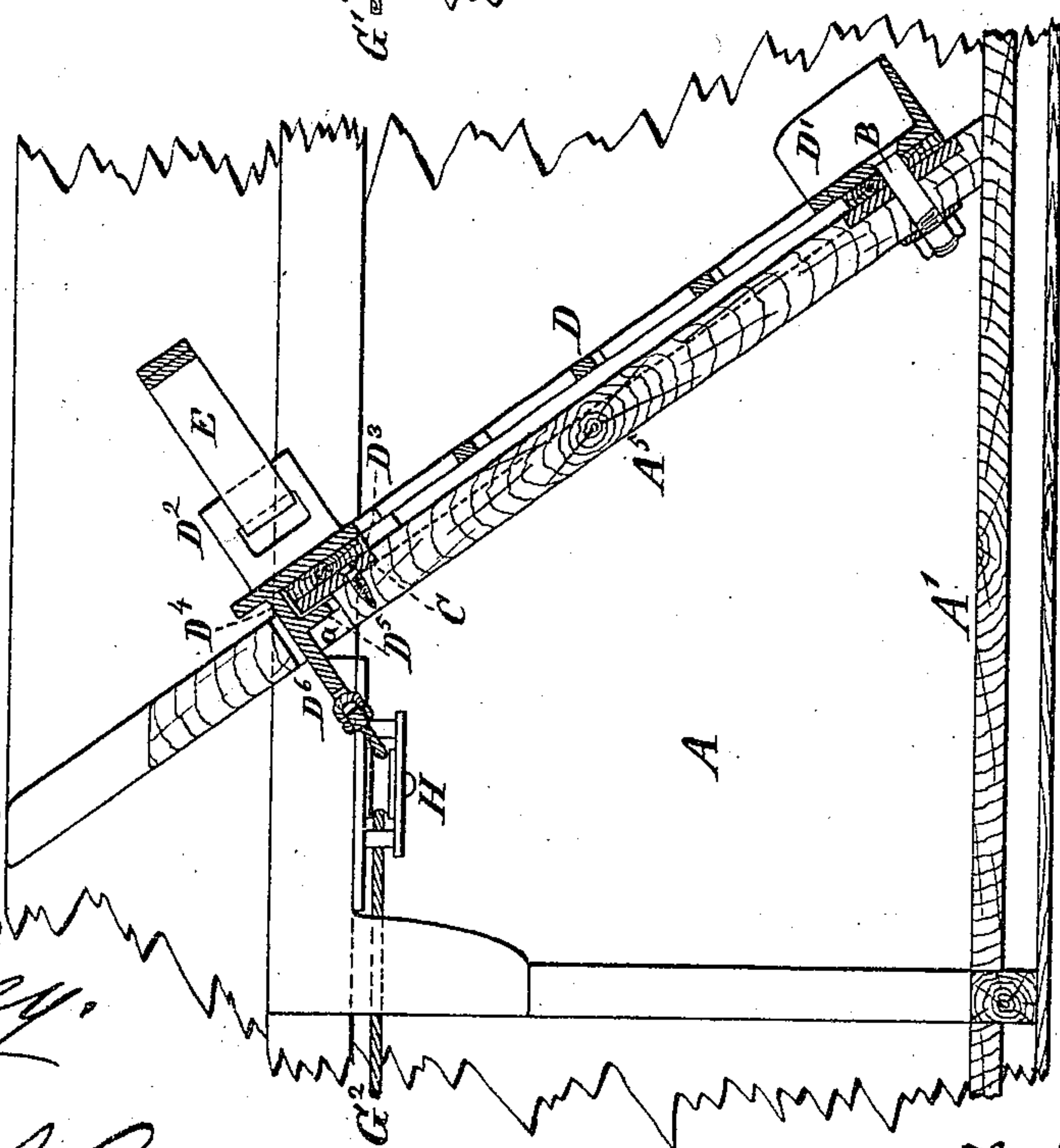
**C. B. ELLIOTT.**  
**Steering Devices.**

No. 148,434.

Patented March 10, 1874.



**Fig. 1.**



Witnesses.

*W. C. Dey.*

*Arnold Hermann.*

Inventor,

*C. B. Elliott.*

*by his attorney*

*J. L. Stetson.*



# UNITED STATES PATENT OFFICE.

CHARLES B. ELLIOTT, OF GREENPOINT, NEW YORK.

## IMPROVEMENT IN STEERING DEVICES.

Specification forming part of Letters Patent No. **148,431**, dated March 10, 1874; application filed February 13, 1874.

*To all whom it may concern:*

Be it known that I, CHARLES B. ELLIOTT, of Greenpoint, Kings county, in the State of New York, have invented certain Improvements relating to Boat-Steering, of which the following is a specification:

The invention is intended more especially for very slender and light row-boats, used for racing and analogous fancy purposes, but may be used with some advantage in row-boats of other descriptions, and even, possibly, on sail-boats, when for any reason it may be convenient for the steersman to steer with his foot.

It is peculiarly necessary with race-boats to allow the steersman the unobstructed use of his hands in working his oar. Means have been before devised to operate with the feet cords or ropes connected to the rudder. The present invention is intended to obviate the difficulties connected therewith. The ordinary arrangement employs both feet, and gives an unstable support or brace for the feet in the vigorous rowing which is required of the steersman simultaneously with his steering-movements.

My invention gives always a firm support in the ordinary position of the stretcher or foot-brace, and among a multitude of other advantages affords great facilities for a proper hold for the feet in the use of the sliding seat. The modern sliding seat, moving fore and aft by the alternate contraction and expansion of the rower's lower limbs, calls for a hold by the feet, to enable the rower to draw himself vigorously toward it, as well as to thrust himself powerfully away.

The following is a description of what I consider the best means of carrying out my invention.

The accompanying drawings form a part of this specification.

Figure 1 is a portion of a longitudinal section through a race-boat, with my improvements. Fig. 2 is a portion of a transverse section thereof.

Similar letters of reference indicate like parts in all the figures.

A is the shell or skin of the boat, and A<sup>1</sup> is what I sometimes call the floor-board. A<sup>2</sup>

A<sup>3</sup>, &c., are other parts of the fixed portion of the boat. A<sup>5</sup> is the stout inclined cross-board, usually denominated a stretcher, against which the feet of the rower may be firmly braced in the act of pulling his oar. I construct the stretcher A<sup>5</sup> with a curved slot, *a*, forming an arc of a circle, of which the pivot-bolt B, near the floor-board, is the center. On this pivot B I mount a foot-piece or swiveling-frame, D, which is shaped to receive one of the feet of the steersman, and allow it to be turned on the pivot B at will. A strap, E, passed through ears D<sup>2</sup> of the sides of the foot-piece D, holds the toe of the steersman firmly in the frame D, while the heel-rim D<sup>1</sup> supports the foot against becoming misplaced by sliding downward too far. In case of the accidental upsetting of the boat, the steersman can readily extricate his foot by drawing it, heel foremost, toward him. A quadrant piece, C, of brass or other suitable metal, is embedded in the face of the stretcher A<sup>5</sup>, and forms a smooth support on which the *lignum-vitæ* face-pieces D<sup>3</sup>, which are riveted on the under face of the frame D, may slide. The frame D is formed with a broad, stout projection, D<sup>4</sup>, reaching into the slot *a*, and carrying a stout lip, D<sup>5</sup>, which hooks under the fixed quadrant C, and holds the foot-piece D and its connections in their proper position, against the vigorous pulls by the foot of the steersman, on the strap E. An arm, D<sup>6</sup>, which may be much slenderer, extends through the slot *a*, and affords a point of attachment for two cords or ropes, G<sup>1</sup> G<sup>2</sup>, which lead around pulleys H, placed opposite thereto on the sides of the boat, respectively, and thence aft to the rudder, one extending along on each side of the boat. They may be attached to the rudder directly, or through the medium of a tiller or other device, as may be preferred.

When the steersman inclines his foot in one direction or the other, he turns the foot-piece D on its pivot B, and moves the cords G<sup>1</sup> G<sup>2</sup>, thereby shifting the rudder to the desired extent. When the parts are properly made, there is no appreciable looseness or rattling of the work. The foot of the steersman is always flatly and firmly braced on the frame D



for the thrusting motion, and the strap E gives him a reliable and firm hold for the contracting motion.

In order to compensate for the thickness of the frame D and its *lignum-vitæ* slides D<sup>3</sup>, a piece of board of corresponding thickness may be fixed on the stretcher alongside, to receive the other foot. By this means the steersman rows with both feet planted on supports of exactly equal height or distance from his body.

Many modifications of the proportions and details may be made by any good mechanic, without departing from the principle of my invention. Thus, instead of the buckle, represented in Fig. 2, for adjusting the strap E, a screw-connection or other delicate means may be employed, or any of the devices used in securing skates to the foot may be employed in this connection; but I esteem it important to provide for the sure detachment of the foot by a vigorous effort, in case of accident. A fixed strap, of suitable form, may take the place of the adjustable strap E, with some success. So, also, a tight instead of an open-work foot-piece, D, or even a piece of hard board, properly fitted, might be employed instead of the metal frame. Some portions of the improvement may be used with advantage without the others; but I prefer the whole together, and in about the proportions here shown.

Two bright pieces of metal, *a' a'*, are employed, to conveniently indicate to the eye the true central position of the foot-piece, and consequently of the rudder. The piece D may be pivoted under the stretcher. In such case the ears D<sup>2</sup> will project through the slot *a* in the same, and receive the strap E the same as shown. This construction does away with the parts D<sup>4</sup> D<sup>5</sup>. It affords a firm hold for the foot,

holding it between the strap E and the face of the stretcher.

The heel may rest in a curved fixed support, or it may rest the same as shown, in a movable socket, mounted on a pivot extending through the stretcher.

Some of the advantages due to certain features of the invention may be separately enumerated, as follows: First, by reason of the fact that the foot-piece D moves in the plane of the stretcher, on the front thereof, it affords a firm support for the thrust of the foot in all positions, and allows motion to be imparted at any period in the stroke; second, by reason of the steering-ropes G<sup>1</sup> G<sup>2</sup> lying under and forward of the stretcher, and being connected to the foot-piece D through the medium of a rigid arm from the latter, extending through a curved slot, I am able to keep the front of the stretcher clear, and to communicate motion directly to the steering-ropes, without any allowance for lost motion; third, by reason of the lip D<sup>5</sup> matching under the stretcher, as shown, I am able to apply the force of the foot in drawing the body forward by means of the strap E, attached to the foot-piece.

I claim as my invention—

The pivoted foot-piece D on the front of the stretcher, and moving in the plane thereof, in combination with the steering-ropes G<sup>1</sup> G<sup>2</sup> leading therefrom around the pulley H to the rudder, as specified.

In testimony whereof I have hereunto set my hand this 11th day of February, 1874, in the presence of two subscribing witnesses.

CHAS. B. ELLIOTT.

Witnesses:

WM. C. DEY,  
ARNOLD HÖRMANN.