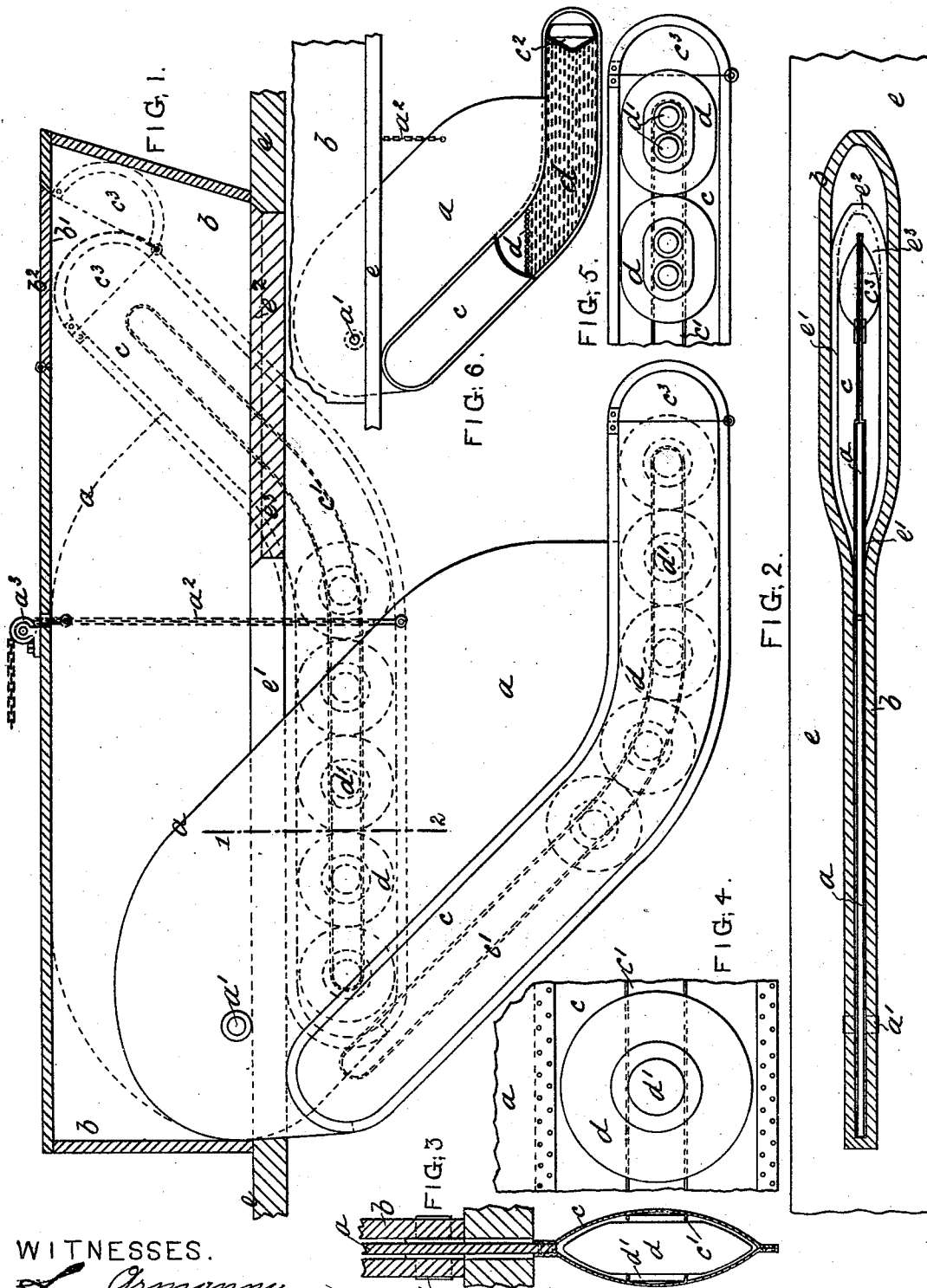


(No Model.)

F. W. BREWSTER.
ADJUSTABLY WEIGHTED CENTER BOARD.

No. 521,494.

Patented June 19, 1894.



WITNESSES.

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FRANCIS WENTWORTH BREWSTER, OF BOURNEMOUTH, ENGLAND.

ADJUSTABLY-WEIGHTED CENTER-BOARD.

SPECIFICATION forming part of Letters Patent No. 521,494, dated June 19, 1894.

Application filed February 19, 1894. Serial No. 500,631. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS WENTWORTH BREWSTER, a subject of the Queen of Great Britain and Ireland, and a resident of Bournemouth, Hampshire, England, have invented an Improved Adjustably-Weighted Center-Board, of which the following is a specification.

This invention relates to the ballasting of center-boards or drop-keels used in yachts and the like, and consists in the combination with the center-board of adjustable ballast adapted to automatically shift along the lower edge or part of the center-board both upon the lowering and upon the raising of the center-board, so that the ballast will always occupy its lowest and most useful position whether the center board be up, down or at any intermediate position.

In the accompanying drawings, Figure 1, represents, in sectional elevation, the keel of a yacht and the center-board trunk, and in elevation, a center-board embodying the present improvements. Fig. 2, represents a sectional plan, with the top of the trunk removed. Fig. 3, represents a sectional elevation on the line 1, 2, Fig. 1. Fig. 4 represents an elevation of Fig. 3, the near sides of the trunk and of the keel and ballast carrying bulb being removed. Fig. 5, represents a like view to Fig. 4, of a modification, and Fig. 6, represents a sectional elevation of a further modification.

a , is the center-board, which is pivotally supported at a' , in a trunk b , and is lowered and raised as required by a chain a^2 , guided by a sheave or pulley a^3 , all in a usual manner. To the lower and after edge or part of the center-board, I apply a ballast-carrying tubular closed bulb c , of an angular formation (Figs. 1, and 6) or of an equivalent curved formation in side view, and preferably of an elongated elliptical or double convex formation in transverse section (Fig. 3). The tubular closed formation of the bulb enables it to contain the shifting ballast d , with an unimpeded facility of shifting as the manipulation of the center-board may occasion; its angular formation enables such ballast to shift to the respectively lowest part of the center-board when raised or when lowered or when at any intermediate position; and its ellipti-

cal formation and smooth exterior enable it to pass through the water without offering any appreciable resistance to the way of the yacht. The bulb is preferably made in longitudinal half-parts (Fig. 3), which may be riveted or otherwise secured together and to the lower and after edge of the center-board (Figs. 3 and 4), so that the whole width and depth of its interior may be open to and available for the ballast. Or, the half-parts of the bulb may be applied to the lower part of the center-board so that the latter will be continued longitudinally and vertically through the bulb so as to divide its interior into equal lateral compartments.

The ballast d , may advantageously, be made of lead or of other heavy, and preferably inoxidizable metal; and may be adapted to shift by rolling along the bulb (Figs. 1, 3 and 4) in which event, it is made approximately of the cross sectional form of the bulb, and circular in side elevation, and is formed with trunnions d' , or adapted with runner-wheels, roller-bearings or antifriction wheels adapted to rest and roll on or in rails or guide-ways c' which may be formed on or secured to the inner sides of the bulb c , and are closed at each end at a distance from the bulb ends to prevent the ballast from impact against the latter. Or, the ballast may be adapted to shift by sliding along the bulb, (Fig. 5,) in which event it is made of an elongated form in side elevation, and is formed, at each side, with extended bearings d' , adapted to slide along rails or guide-ways c' . Or, the ballast may consist of gun-shot, quicksilver or other materials of greater specific gravity than water and adapted to shift in molecular or liquid-like bulk along the bulb, (Fig. 6,) in which event the guide-ways c' , would not be required and the ends of the bulb might be fitted with dash-plates c^2 , serving to prevent sudden impact of the ballast against the bulb ends. The after end of the bulb is preferably fitted with a hinged or sliding and suitably secured cap c^3 , in order to permit of access being readily obtained to the interior of the bulb when in its raised position, (*vide* the dotted lines, Fig. 1,) so that ballast may be added or removed as required.

The trunk b , is shaped and the keel e , is slotted as at e' , to accommodate the center-

board and its ballast-carrying bulb, Figs. 1 and 2. The keel is also formed with a seating e^2 , to accommodate exchangeable weighted boards or metal blocks e^3 , respectively adapted to close the bulged end of the slot e' when the bulb b , is down (*vide* the full lines, Fig. 1), and when it is up, *vide* the dotted lines, Fig. 1. The trunk is also made with a top opening b' , through which the bulb can be got at, and the boards or blocks e^3 , adjusted, and which is normally closed by a lid b^2 .

I claim as my invention, in yachts and the like—

1. In combination, a pivoted center board or drop keel, and adjustable ballast contained therein and adapted to automatically shift along the lower edge or part thereof to the lowest part thereof upon the center board being raised or lowered, as set forth.

2. In combination, a pivoted center board, a ballast carrying tubular closed bulb of an angular or curved formation secured to the lower edge or part of the center-board, and contained adjustable ballast adapted to au-

tomatically shift along and within the bulb to the lowest part thereof upon the center-board being raised or lowered, and means of raising and lowering the center-board, as set forth.

3. In combination, a pivoted center board, a ballast-carrying tubular closed bulb of an angular or curved formation secured to the lower edge or part of the center-board and formed with inner rails or guideways, and contained adjustable ballast adapted to automatically roll or slide along and within the bulb to the lowest part thereof upon the center-board being raised or lowered, and means for raising and lowering the center board, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANCIS WENTWORTH BREWSTER.

Witnesses:

ARTHUR ALEXANDER CROZIER,
TOM FRANCIS BARNES.