

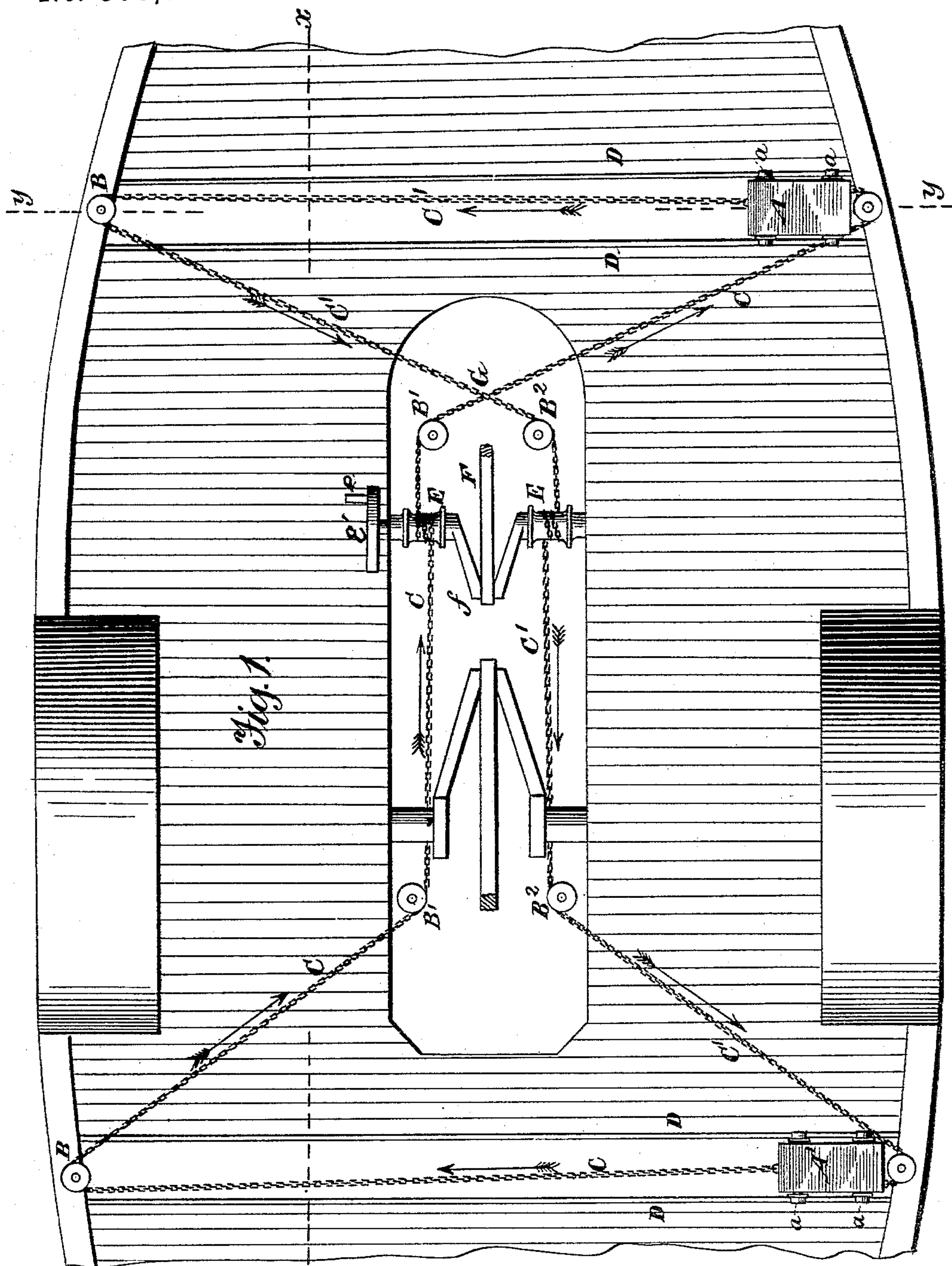
(No Model.)

2 Sheets—Sheet 1.

E. P. HICKEY.
BALLAST FOR VESSELS.

No. 300,471.

Patented June 17. 1884.



Witnesses.
A. Rupert
Edgar T. Gaddis

Inventor.
E. P. Hickey
by J. R. Nottingham
att'y.

(No Model.)

2 Sheets—Sheet 2.

E. P. HICKEY.
BALLAST FOR VESSELS.

No. 300,471.

Patented June 17, 1884.

Fig. 2.

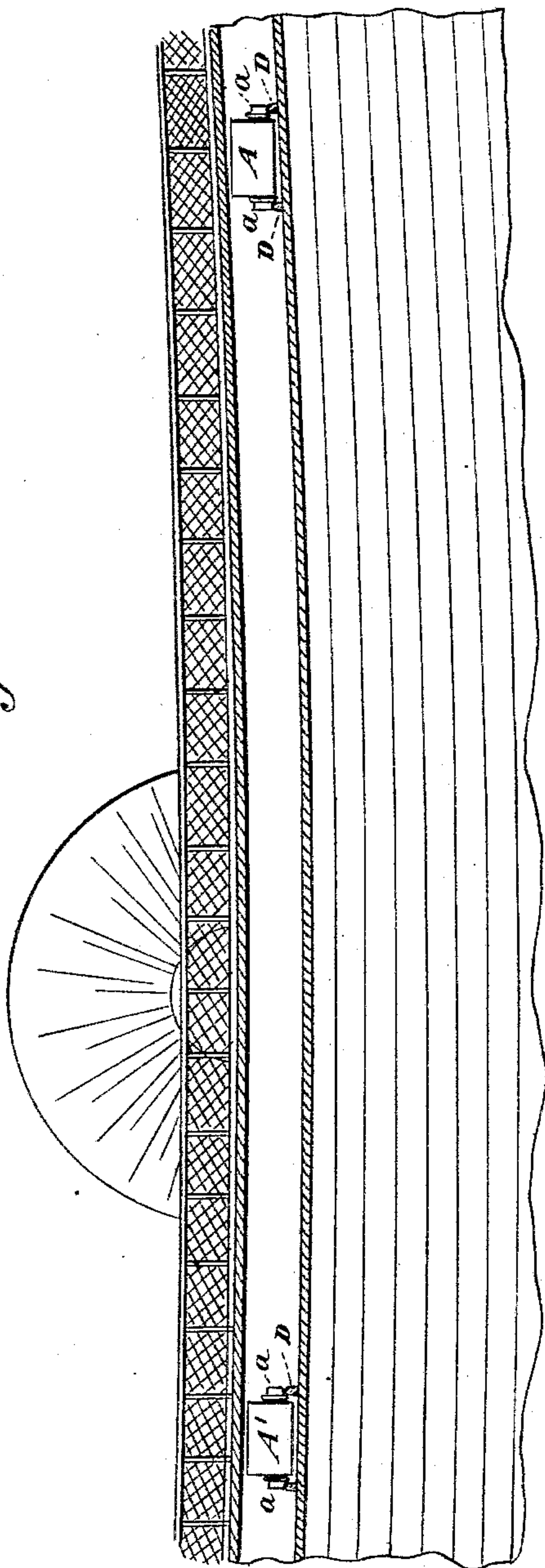
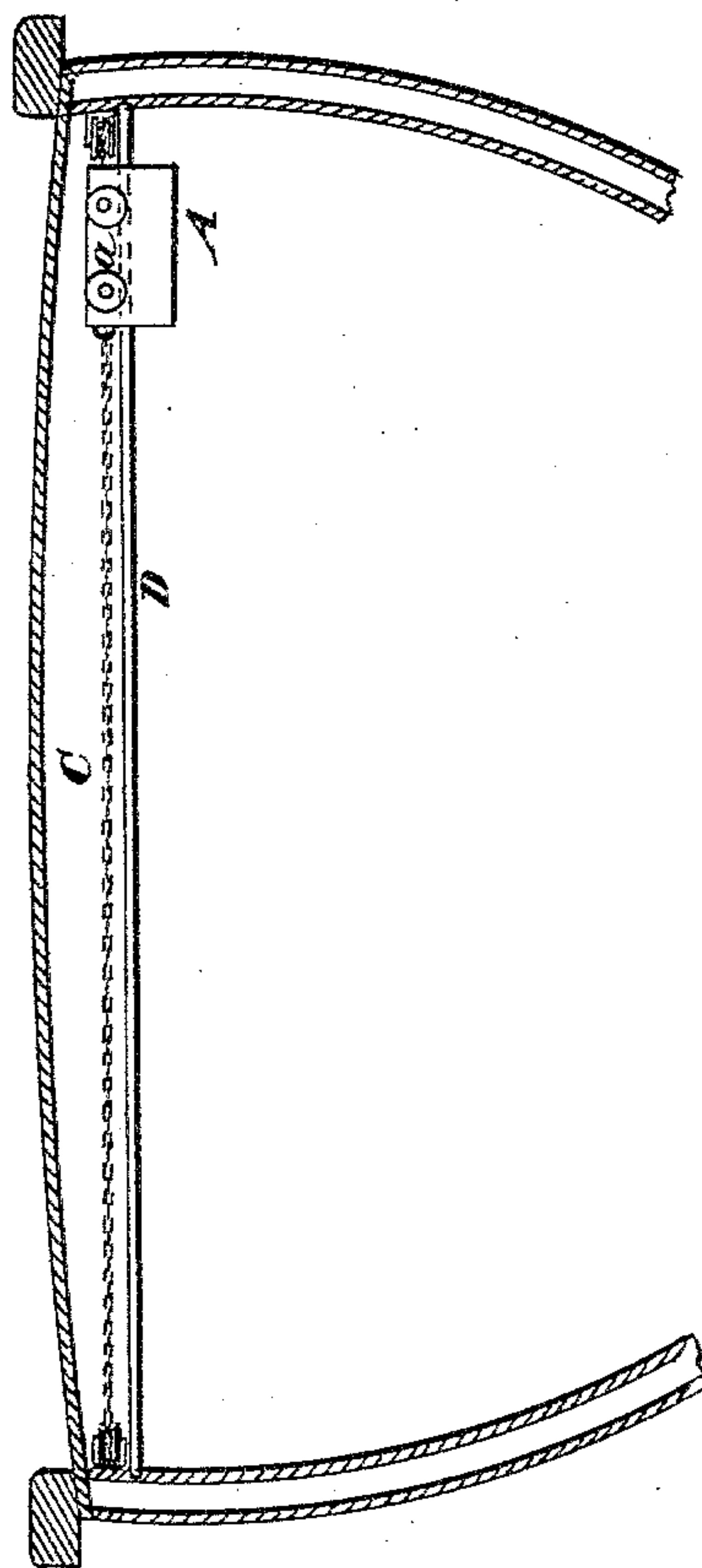


Fig. 3.



Witnesses.
A. Ruppert
Edgar J. Gadsby

Inventor.
E. P. Hickey
by J. R. Nottingham
att'y.

UNITED STATES PATENT OFFICE.

EDMUND P. HICKEY, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
OF ONE-HALF TO ALBERT EDELEN, OF BALTIMORE, MARYLAND.

BALLAST FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 300,471, dated June 17, 1884.

Application filed April 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDMUND P. HICKEY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Ballast for Vessels, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a new and useful manner and means for ballasting ships or other vessels; and the novelty consists in the construction, arrangement, and adaptation of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claims.

In sea-going and other vessels a proper amount of ballast is necessary, and it is not only desirable that such ballast shall be compact, so as to occupy but a minimum of space, but it is necessary that it shall be capable of being readily shifted from one side of the vessel, to meet contingencies of shifting cargo and other conditions which render it necessary to "trim" ship.

The object of this invention is to provide, first, a maximum of weight to a minimum of space; second, to divide the ballast fore and aft; third, to move the divided ballast in the same direction uniformly; fourth, to move the ballast at will, or as occasion may require, with the least possible friction, and with a power that will under no ordinary circumstances fail to effect the purpose. These objects I seek to attain by the mechanism and combinations of mechanisms fully illustrated in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a top plan view; Fig. 2, a sectional view on line *xx*, Fig. 1, showing an independent deck covering the device; and Fig. 3, a modification showing the ballast suspended.

In what I consider the best means of carrying out the invention, I divide the ballast into two equal or nearly equal parts, arranging one part sufficiently forward of midships, and the other part sufficiently aft, to properly trim the ship. The ballast, of lead or hammered iron, is mounted on wheels or rollers having grooved peripheries. These wheels or rollers travel upon tracks or guides which extend across the vessel beneath the deck, or in any desirable location. A chain in two parts, each part

connecting the two portions of the ballast at opposite ends, is operated by an intermediate shaft and power-connections to move both portions of the ballast in the same direction at the same time.

Referring to the drawings, in which similar letters of reference indicate like parts in all the figures, *A A'* designate the ballast, of metal, and of such dimensions as to be convenient for the purpose, mounted on wheels *a a*, which travel upon tracks or guides *D*, extending across the vessel from side to side. The ballast may be suspended from the rails or tracks, and the wheels or rollers have peripheral grooves to hold them into engagement with the tracks, if desired; but in any case the wheels *a* are so conditioned that no ordinary rolling will disengage them. At each end of each track is a stationary roller or pulley, *B*, and other stationary rollers, as *B' B''*, are arranged at other points, for purposes which will presently appear. A chain, *C*, attached to one end of the ballast-car *A*, passes over one of the pulleys or rollers *B*, thence aft and beyond the longitudinal center of the hull over a pulley, *B'*, thence under and around a shaft, *E*, thence aft and around a pulley, *B*, and the opposite end secured to the opposite end of the ballast-car *A'*, while a similar chain, *C'*, secured to the other end of car *A*, passes over pulley *B*, thence across ship and over pulley *B*, crossing the plane of the chain *C* at a point marked *G*, thence over and around the shaft, around pulleys *B* and *B'*, and is secured to the car *A'*, as shown.

It will be observed that the chains *C* and *C'*, in connection with the ballast-cars *A* and *A'*, form an endless chain, which crosses itself at the point *G*, and which passes around the shaft *E* in reverse directions.

It will further be observed that any movement of the shaft *E* will move both cars in the same direction at the same rate of speed. The shaft *E* has a crank, *f*, a pitman, *F*, connected therewith being loosely joined with the piston of a small engine worked by steam generated in one of the boilers of the ship. This engine and its connections it is not necessary to illustrate in this application, as they may be of any approved construction, and of themselves form no part of this invention. The en-

gine, however, it is designed shall be under the control of the pilot, and any means which will allow such pilot to readily work the engine to rotate the shaft E in either direction may be employed.

Modifications in details of construction may be made without departing from the principle or sacrificing the advantages of my invention—as, for instance, the tracks may be arranged in any location, so that they run across ship, and the ballast-car may be suspended or ride on the rails by gravity. The shaft E may be rotated by hand and crank connections, as E' e, if desired.

The device is of service in loading and unloading, in shifting cargo, and in counteracting a rush toward one side of the vessel after sighting land.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In combination with tracks or guides ar-

ranged transverse to the plane of the ship, and ballast-cars adapted to travel on such tracks, two chains arranged to cross each other and with the cars constitute an endless chain, and a single shaft at E, adapted to operate such chain to force the cars in the same direction simultaneously, as set forth.

2. The combination, with the tracks D D and cars A A', as described, of the chains C and C', attached to the cars as shown, and crossing each other, as at G, and the shaft E, operating said chains to move the cars in the same direction simultaneously, and the rollers B B' B'', all arranged and adapted to operate as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDMUND P. HICKEY.

Witnesses:

EDGAR T. GADDIS,
SAML. C. MILLS.