

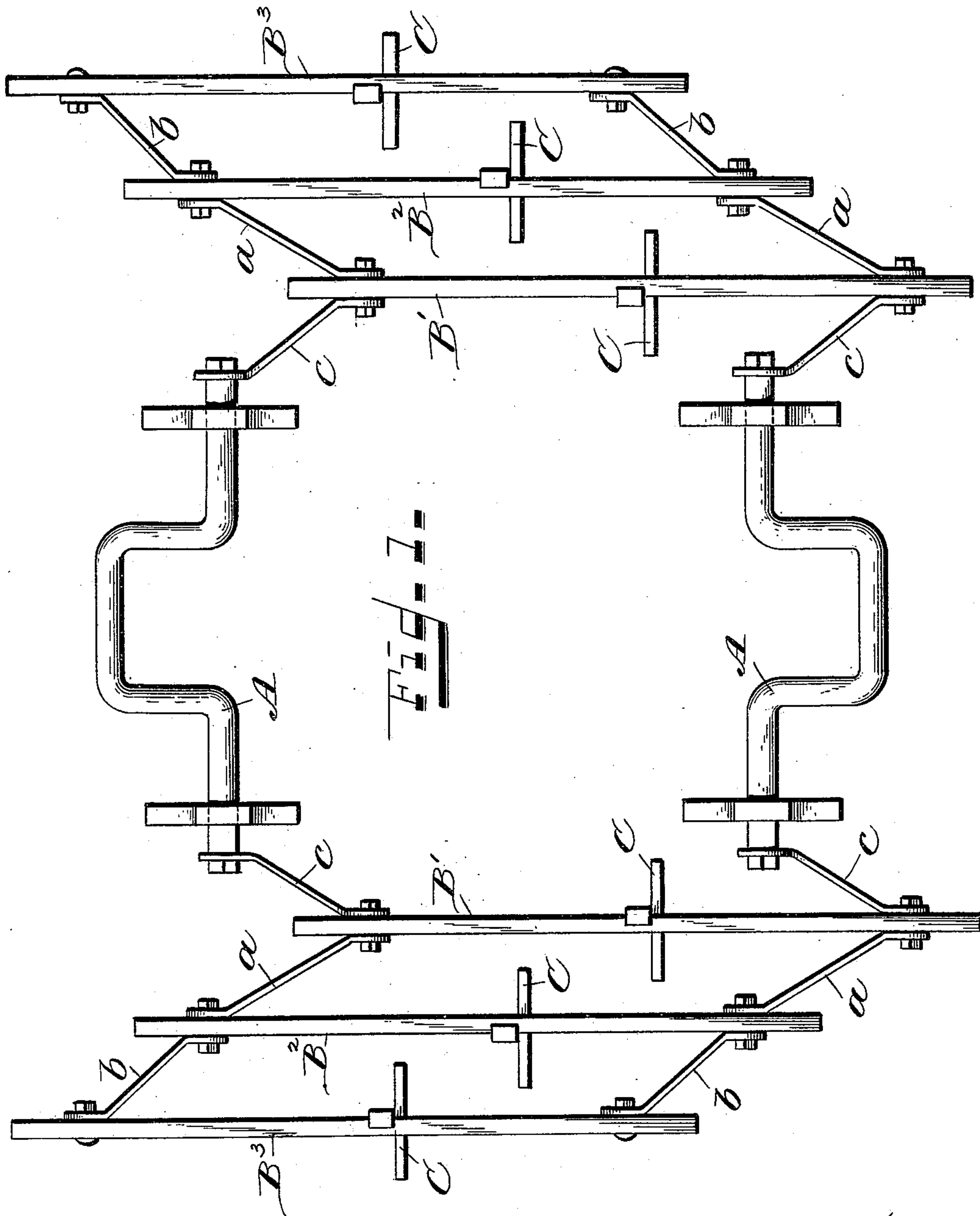
(No Model.)

2 Sheets—Sheet 1.

F. C. BIPPES.  
PROPELLING-MECHANISM FOR BOATS.

No. 547,137.

Patented Oct. 1, 1895.



Witnesses.

Frank B. Finney  
Bernard J. H. Auffeld.

Inventor.

Friedrich Christian Bippes  
By J. Thomson Cross  
his Attorney.

(No Model.)

2 Sheets—Sheet 2.

F. C. BIPPES.  
PROPELLING MECHANISM FOR BOATS.

No. 547,137.

Patented Oct. 1, 1895.

Fig. 2.

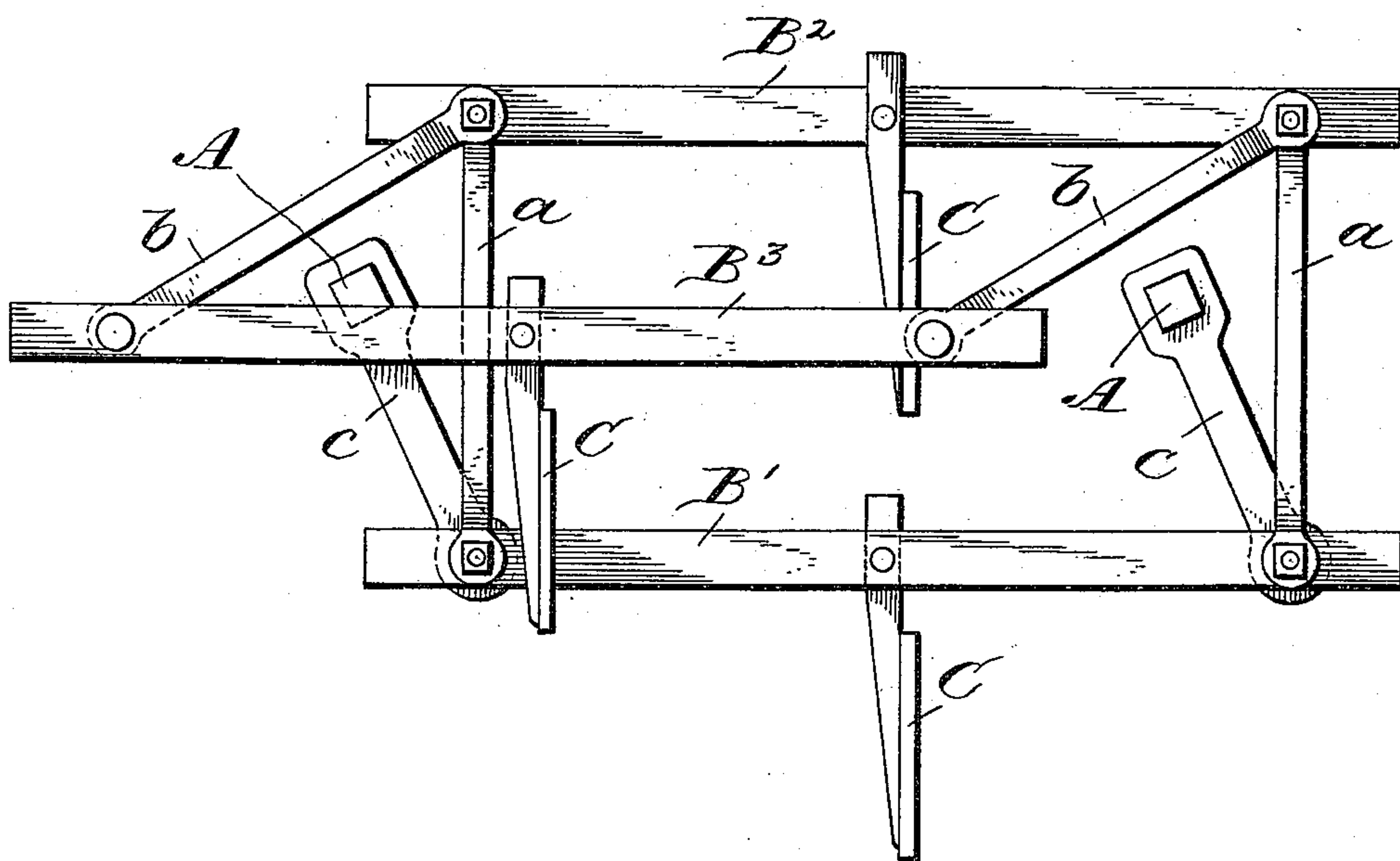
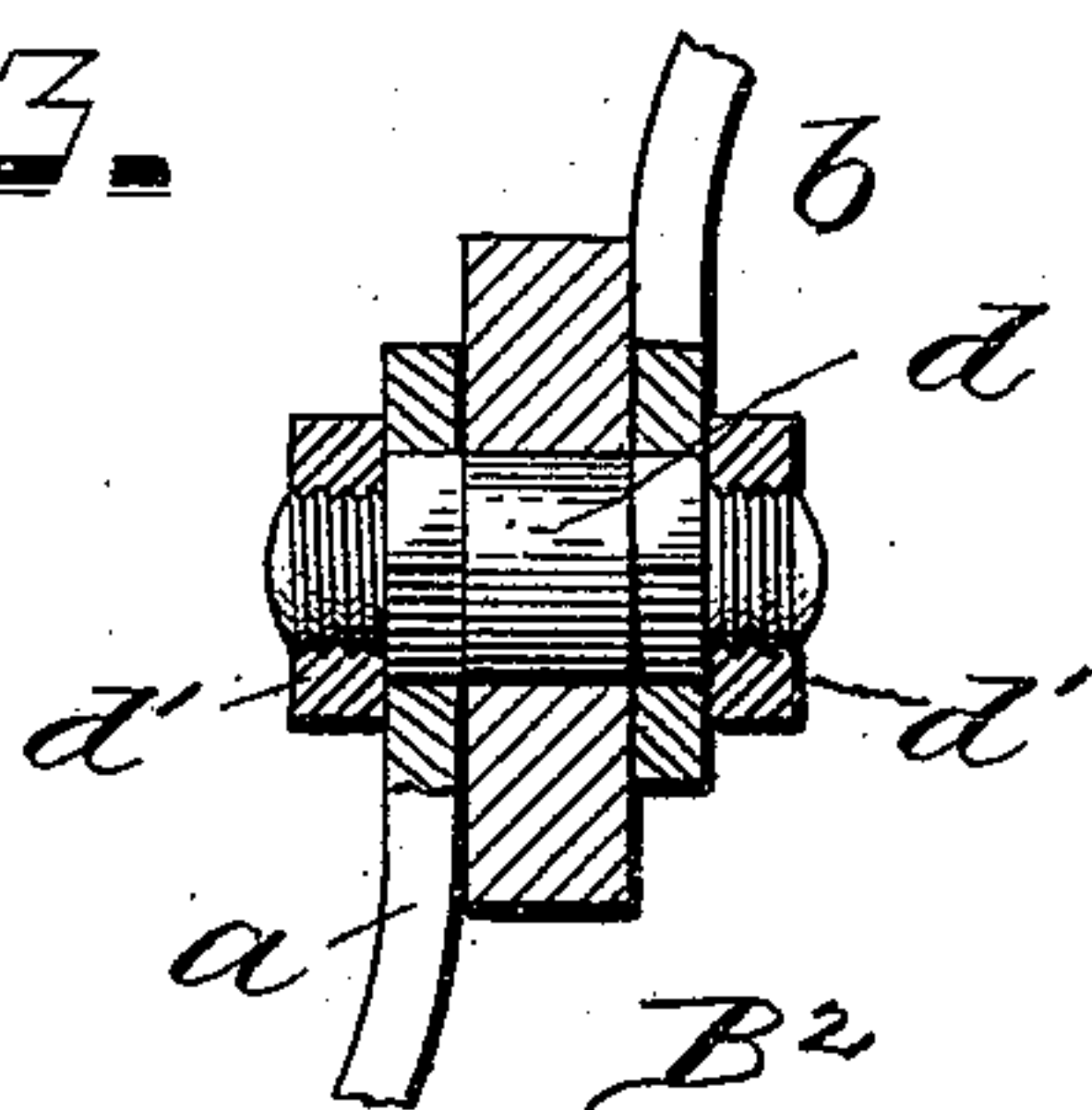


Fig. 3.



Witnesses.

Frank B. Finney  
Bernard J. Hausfeld.

Inventor.

Friedrich Christian Bippes  
By J. Thomson Cross  
his Attorney.



# UNITED STATES PATENT OFFICE.

FRIEDRICH CHRISTIAN BIPPES, OF MIDDLETOWN, ASSIGNOR OF TWO-THIRDS TO CHRISTIAN LANG, OF CINCINNATI, AND GUSTAVE BETZ, OF HAMILTON, OHIO.

## PROPELLING MECHANISM FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 547,137, dated October 1, 1895.

Application filed July 17, 1893. Serial No. 480,776. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH CHRISTIAN BIPPES, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Propelling Mechanism for Boats, of which the following is a specification.

My invention relates to improvements in propelling mechanism for boats of the class known as "reciprocating propellers;" and the object of the said invention is to provide mechanism which is simple in construction, strong and durable, and by which great speed can be obtained, the movement being such that the paddles enter the water on a substantially vertical plane and after making the requisite stroke emerge therefrom in the same way, thereby greatly diminishing the amount of force necessary to impel the boat.

My invention can be adapted to either small boats, and be propelled by hand or foot power, or to large vessels to take the place of the ordinary paddle-wheels, and more especially to this latter class.

The novelty of my invention will be hereinafter more fully set forth, and particularly pointed out in the claim.

Referring to the drawings, wherein similar letters of reference are used to indicate like parts, Figure 1 is a plan view of my improved device, showing it in connection with a driving-shaft. Fig. 2 is a side elevation of the same, and Fig. 3 is a detail section showing the connection between the paddle-beams and their connecting-levers.

In the drawings it has not been deemed necessary to show any part of a boat or vessel or any driving mechanism with the exception of the driving-shafts A, which may be suitably mounted in the boat or vessel and connected with the engine or motive power by any of the well-known means.

B', B<sup>2</sup>, and B<sup>3</sup> designate the paddle-beams, which lie in a horizontal plane parallel to the longitudinal axis of the boat or axis. To each of these paddle-beams are firmly secured by means of mortising and bolting or riveting one or more paddles C. In the drawings, I have only shown one paddle secured to each

of the said paddle-beams; but as many may be used as desired, according to the size and capacity of the boat or vessel. The paddle-beams are connected by means of the crank arms or levers *a b*, bent into such a position as to keep them the proper distances apart, and the short arms or levers *c*, one end of which are rigidly secured to the driving-shafts. These crank arms or levers are rigidly secured together and pivotally secured to the paddle-beams by means of the bolts *d* and nuts *d'*. (Shown in detail in Fig. 3 of the drawings.) The bolt *d* is round in cross-section in the center of a length equal to the width of the paddle-beam through which it passes, and is then made rectangular on both ends for the reception of the crank arms or levers which are provided with rectangular openings. Both ends of the said bolts *d* are provided with a screw-threaded portion for the reception of the nuts *d'*. By this means a rigid connection is formed between the crank arms or levers, and also admits of the parts being readily tightened to take up the wear and tear and thereby prevent loose and rattling joints; also, in the event of the breaking of any parts, they can be readily taken apart and new pieces inserted without loss of much time. The short arm or lever *c* is rigidly secured to the driving-shaft by the means shown in the drawings or any other suitable means. These arms or levers *a*, *b*, and *c* being all rigidly secured together form practically one crank-shaft, and are set at such angles (see Fig. 2) as to impart alternative reciprocating movements to the paddle-beams B' B<sup>2</sup> B<sup>3</sup>, and the movement is such that the paddles will enter the water in a substantially vertical plane and then move backward in an almost horizontal plane, thereby giving the requisite stroke, and then emerging from the water on substantially the same plane as on entering the water. It will be readily seen and understood that such a movement as this will greatly diminish the frictional resistance of the paddles to the water, both on entering it and leaving it, and thereby greatly lessen or diminish the amount of power or force necessary to impel a boat or vessel and also relieve the paddles and other parts of considerable strain.

By my improved construction I claim that great speed can be obtained, as the maximum amount of force exerted to impel the boat or vessel forward is utilized.

- 5 My invention can also be applied to small boats—such as row-boats, skiffs, &c.—and operated by hand or foot power by means of the crank-shaft and a treadle connection, such as is well known and could be applied by any  
10 ordinary mechanic.

Having thus fully described my invention, what I claim is—

- The combination with a driving shaft A, of the horizontal paddle beams, B', B<sup>2</sup>, B<sup>3</sup>, provided with paddle blades C, the bent connect-

ing arms *a*, *b*, *c*, secured to the paddle beams by means of the bolts *d*, provided with a cylindrical portion passing through said beams and rectangular portions passing through the said connecting levers, and the nuts *d'* on each 20 end of the said bolts *d*, thereby rigidly connecting the said bent arms to form a crank shaft, substantially as described, and for the purpose stated.

In witness whereof I have hereunto set my 25 hand this 26th day of June, A. D. 1893.

FRIEDRICH CHRISTIAN BIPPES.

Witnesses:

J. THOMSON CROSS,

BERNARD J. HAUSFELD.