

W. E. Davis.
Screw Propeller.

Nº 56,907.

Patented Aug. 7, 1866.

Fig. 3.

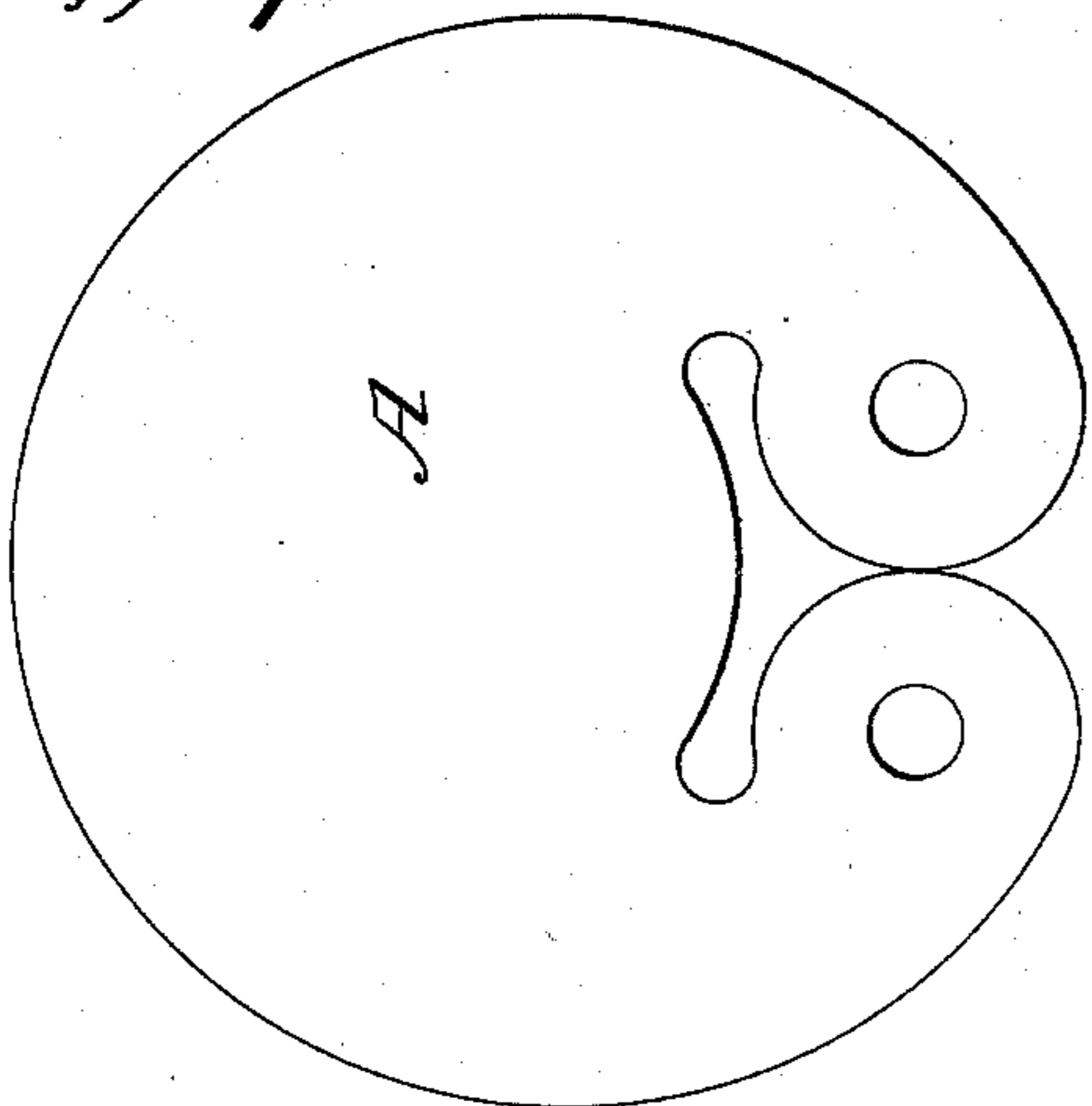


Fig. 6.

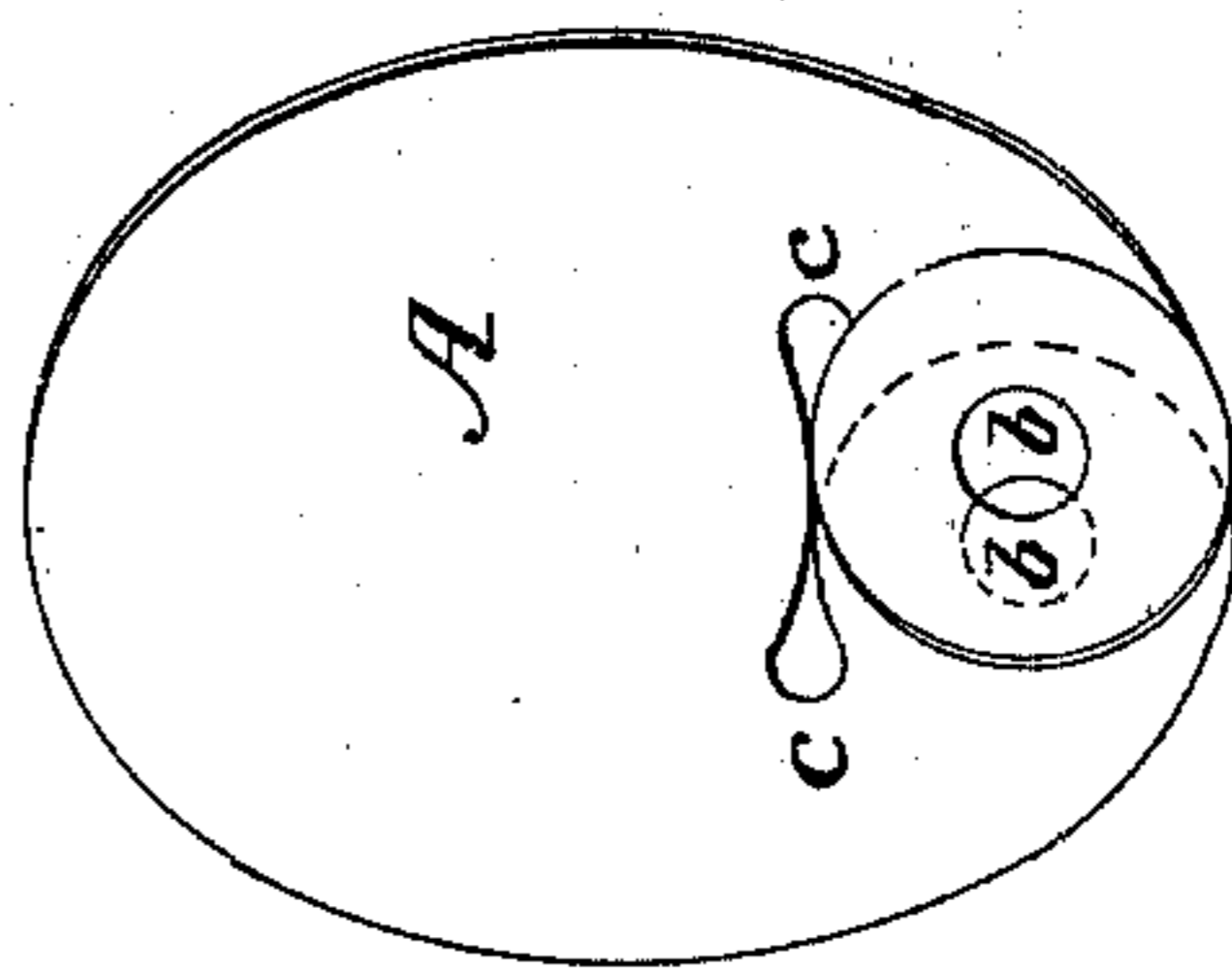


Fig. 2.

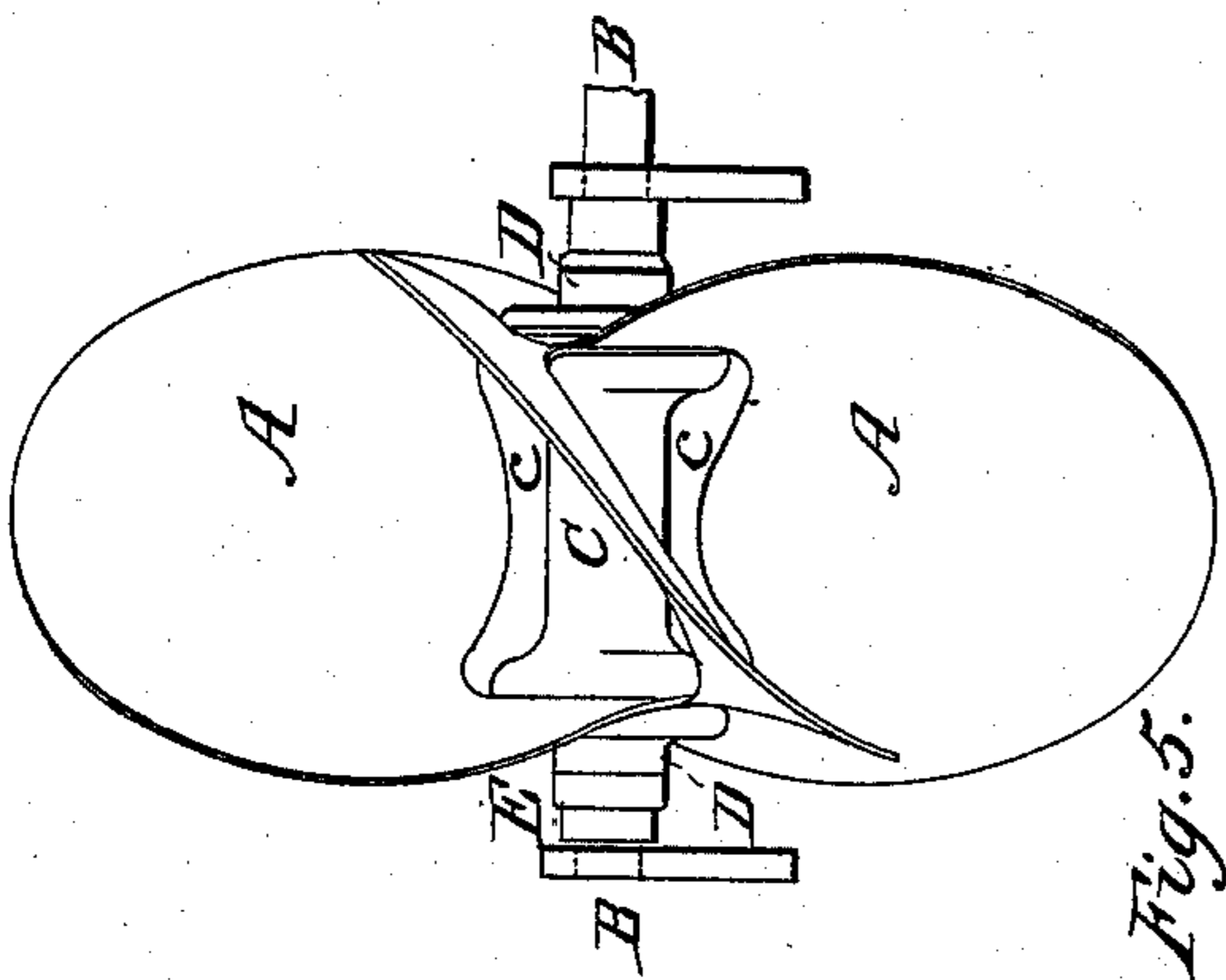


Fig. 5.

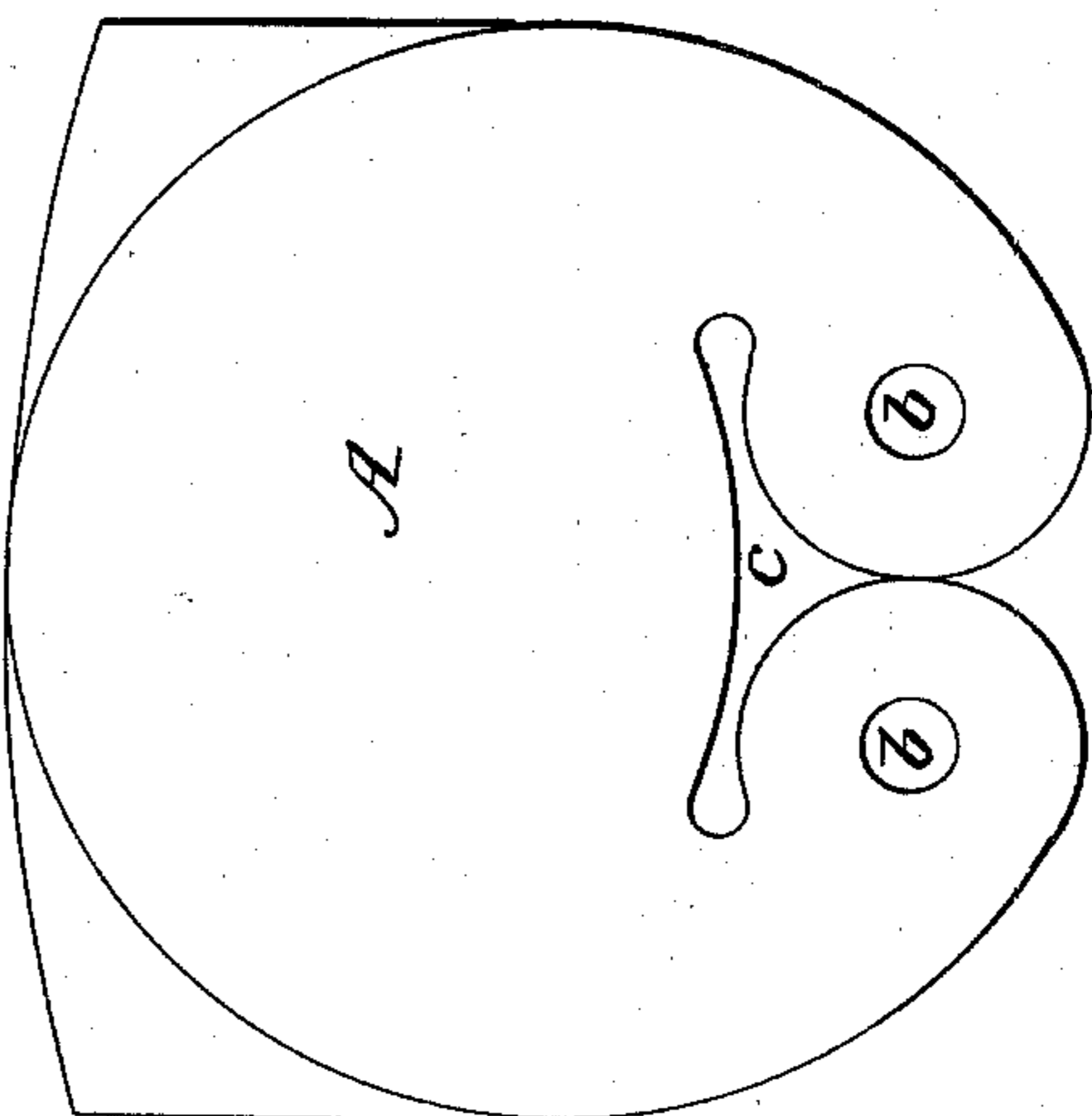


Fig. 1.

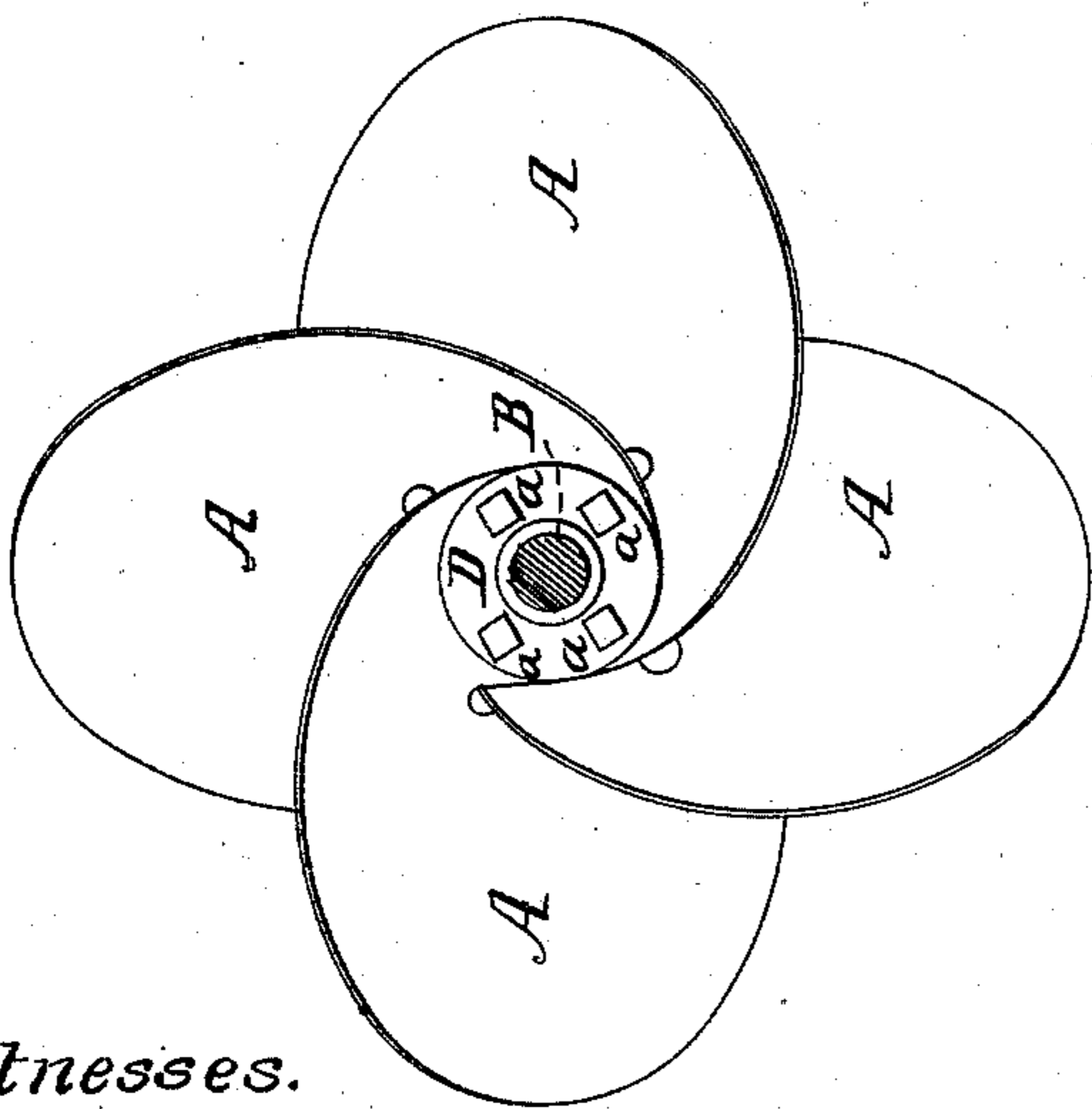
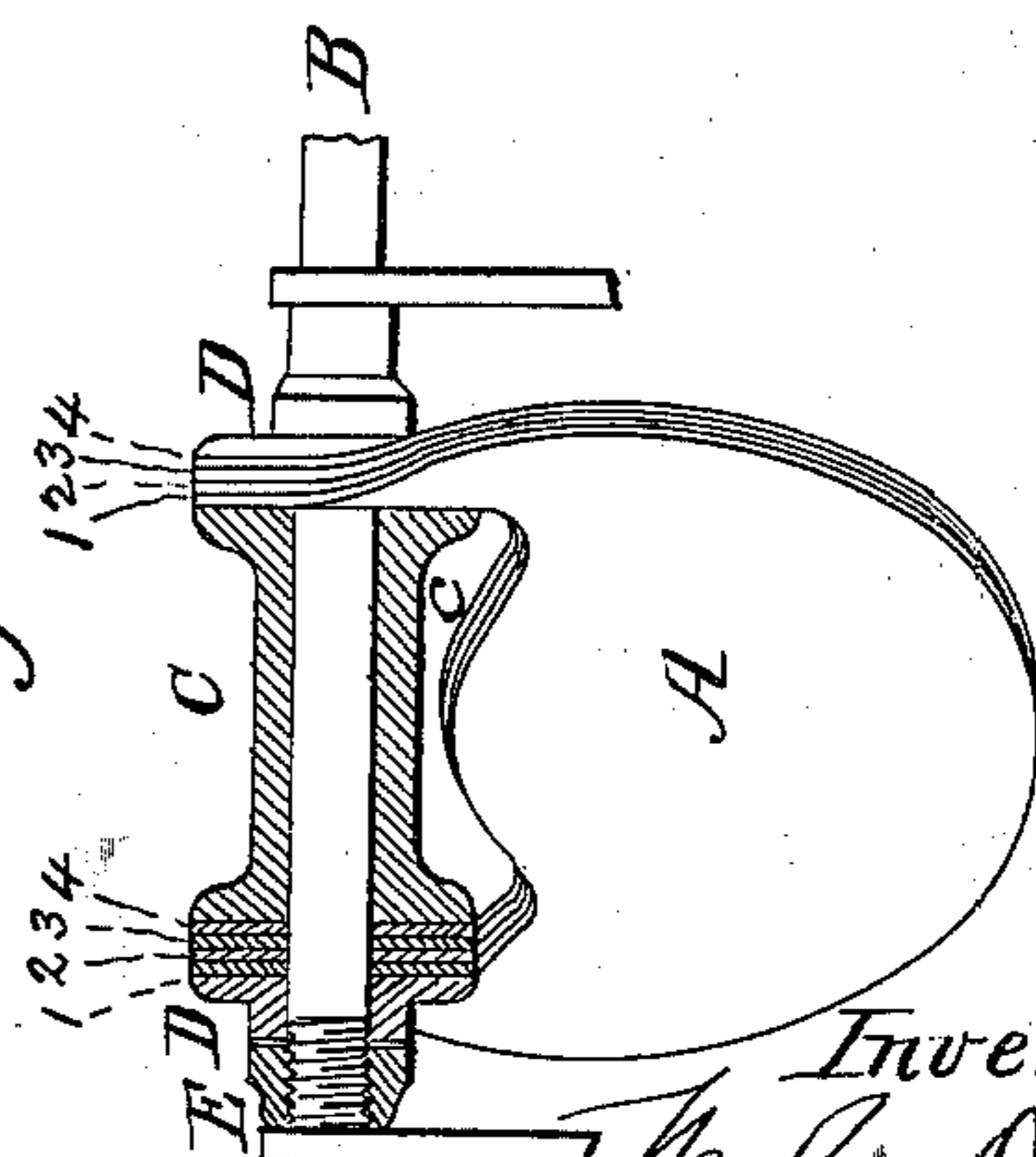


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

WM. EDWARD DAVIS, OF JERSEY CITY, NEW JERSEY.

IMPROVED PROPELLER-SCREW.

Specification forming part of Letters Patent No. 56,907, dated August 7, 1866.

To all whom it may concern:

Be it known that I, WILLIAM E. DAVIS, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Propeller-Screw; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective end view of the screw-propeller. Fig. 2 is perspective side view of the same. Fig. 3 is a plan of a single blade of circular form before being bent to shape. Fig. 4 is a longitudinal view, partially in section, of the screw-propeller. Fig. 5 is a plan of a single blade of rectangular form before being bent to shape. Fig. 6 is a view of single blade after being bent to shape.

Similar letters of reference indicate like parts.

My invention relates to screw-propellers for steamships; and it consists in constructing the screw by the unison of separate blades fastened upon the shaft, the advantages of which are manifold. The screw is lighter, stronger, and cheaper than when cast solid. It is more effective as a propeller on account of equality throughout in the thickness of the blades from the center to the circumference—a form which places their sides at right angles to the line of motion of the shaft, and therefore enables them to exert greater impinging power upon the water in their revolutions than the old cast blades, which are thick at the center and taper off to a thin edge. This improved form of the blades contributes a valuable element of power to a propeller, which will increase the speed of vessels in any given number of revolutions of the screw.

Another very important acquisition secured by my mode of constructing a screw with separate blades is the facility it affords of replacing a broken or injured blade, even at sea, at trifling cost, which accident happening to a solid cast screw ruins it entirely, and during a voyage may endanger life and property. The blades of a screw are all alike and packed together closely, so that they are easily transported, and duplicates can be kept on hand.

To enable others skilled in the art to under-

stand my invention, I will proceed to describe its construction and operation.

Referring to Figs. 1 and 2, A A A A represent the blades in position when fastened together; B, the shaft on which they are hung; C, a hub or cylindrical block, hung loosely on the shaft between the opposite sides of the blades at their point of fastening; D D, slipping collars, one on the extreme end of the shaft and the other on the shaft on the side of the screw which goes next the ship, and both of them on the opposite outer sides of the blades, supporting and bearing them up against the cylindrical block C between them. Outside of the collar D, on the extreme end of the shaft, is a nut or screw-collar, E.

Fig. 4 is a section of the propeller, showing the mode of connecting the blades with the shaft and fastening them.

Fig. 6 is a separate blade ready for forming a screw and attaching it to the shaft.

To put the blades together in the shaft, they are packed together, as shown in Fig. 4, with the cylindrical block C between their sides at the opposite points of fastening, where the opposite sides of each blade are placed in position relatively to each other according to the numbers marked upon them, No. 1 on the outside at one end of the propeller corresponding with No. 1 on the inside at the other end, No. 2 with No. 2, and so for all or any number of blades forming the screw respectively. When thus arranged with the cylindrical block C between them they are slipped on the shaft up against the inside collar D, which rests upon a shoulder on the shaft. The outside collar D is then crowded against the outer side of the screw-blades by the nut E, having been first moved to equidistant position on the shaft, as represented by Fig. 1. To hold them in this relation to each other and secure them in place firmly, I put bolts *a a a a*, Fig. 1, through the collars D D, passing through corresponding holes in the sides of the screw; or they may be fastened by feathering them onto the shaft.

Figs. 3 and 5 represent the blades flat, just as they are cut out of boiler-iron or other plate of suitable metal, No. 3 being a perfect circle and No. 5 rectangular on the exterior edge. The inner side of the blade in both is a true semicircle.

The holes *b b* are made for the shaft and

in the center of two smaller circles, forming the ends or sides of the blades, which are fastened together as above described, separated only by a slit in the metal plate of the flat blade. The curvilinear-sided triangular space *c* cut out of the flat plate allows the ends of the blade to spread and form the opening between the screw and the shaft, as seen in Fig. 2.

For bending the flat blades to the desired curvilinear shape for the screw, as represented by Fig. 6, they may be blocked up with the hammer when hot or formed with calender-rolls.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The propeller screw-blades A A, cut out of flat metal plates and bent up to shape, substantially as herein described.

2. The mode of connecting and fastening the separate screw-blades upon the shaft of a propeller, in the manner and for the purposes substantially as herein described.

WILLIAM EDWARD DAVIS.

Witnesses:

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