(No Model.)

P. & K. KAUL.

PROPELLER FOR SHIPS, &c.

No. 368,534. Patented Aug. 16, 1887.

Fig. 1.

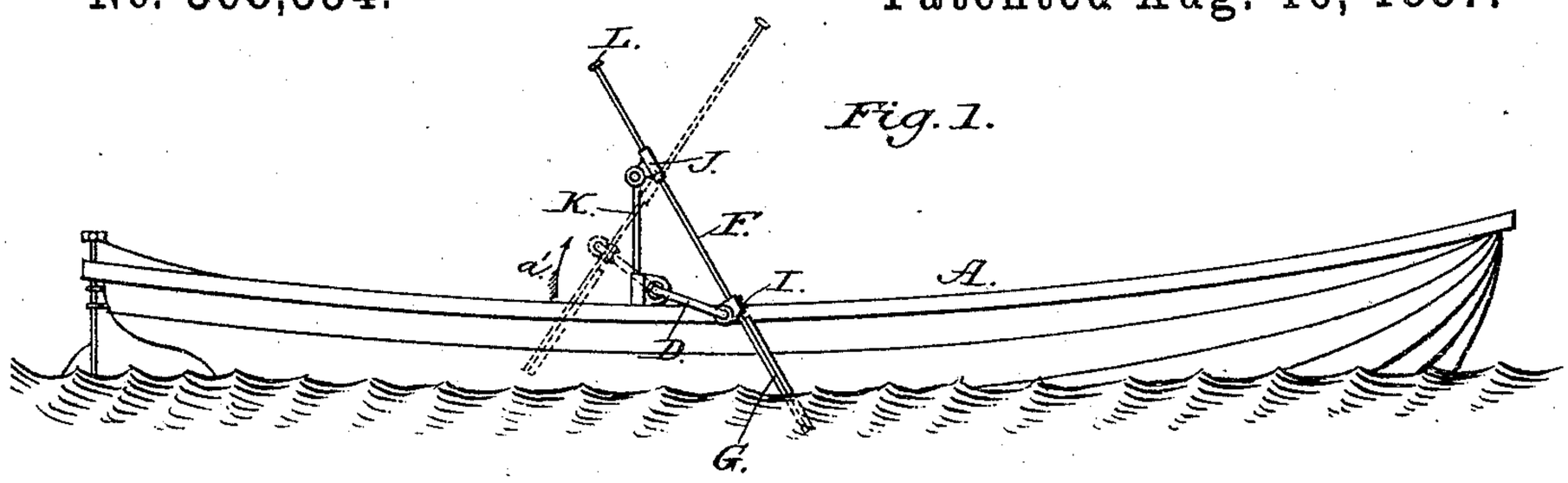

Fig. 2.

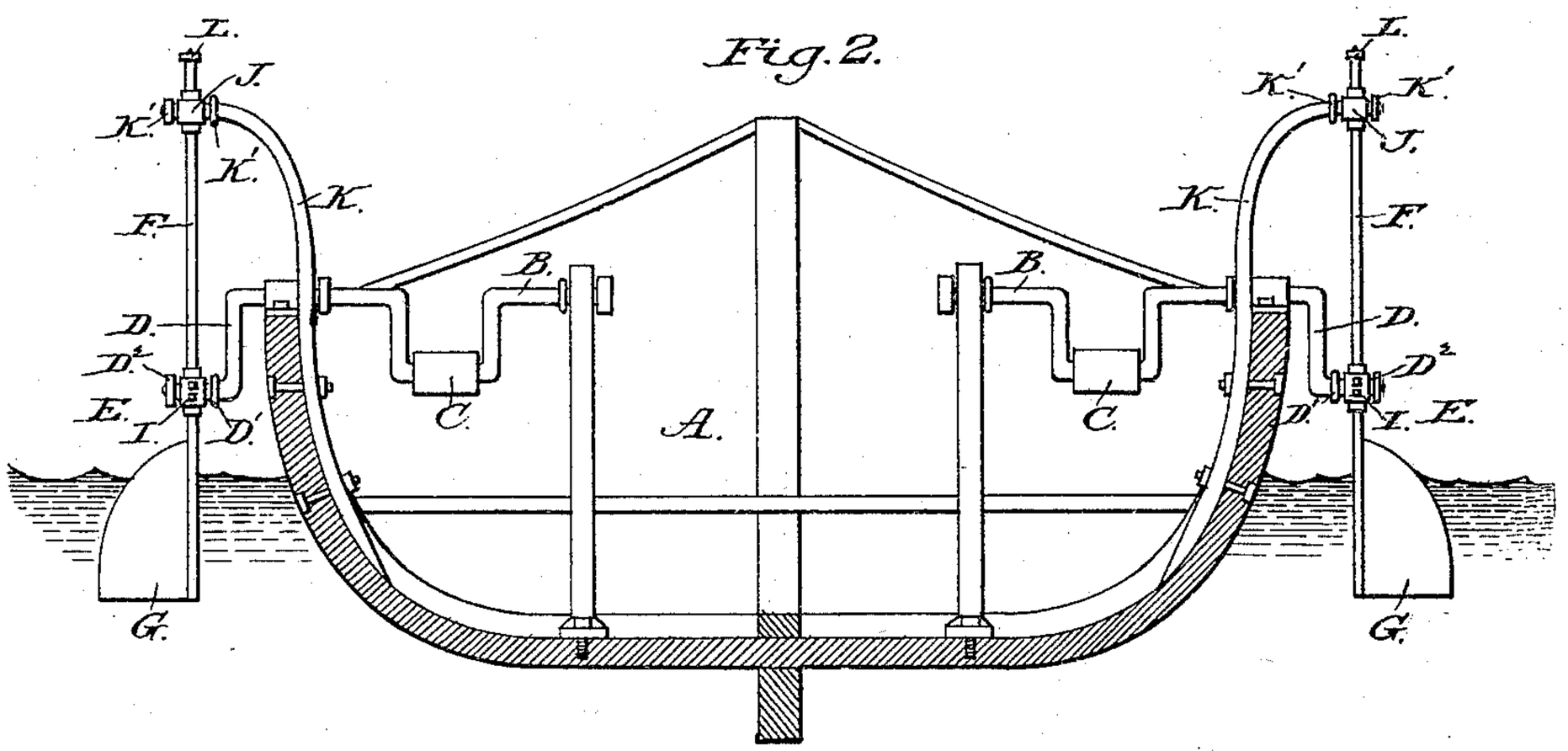

Fig. 3.

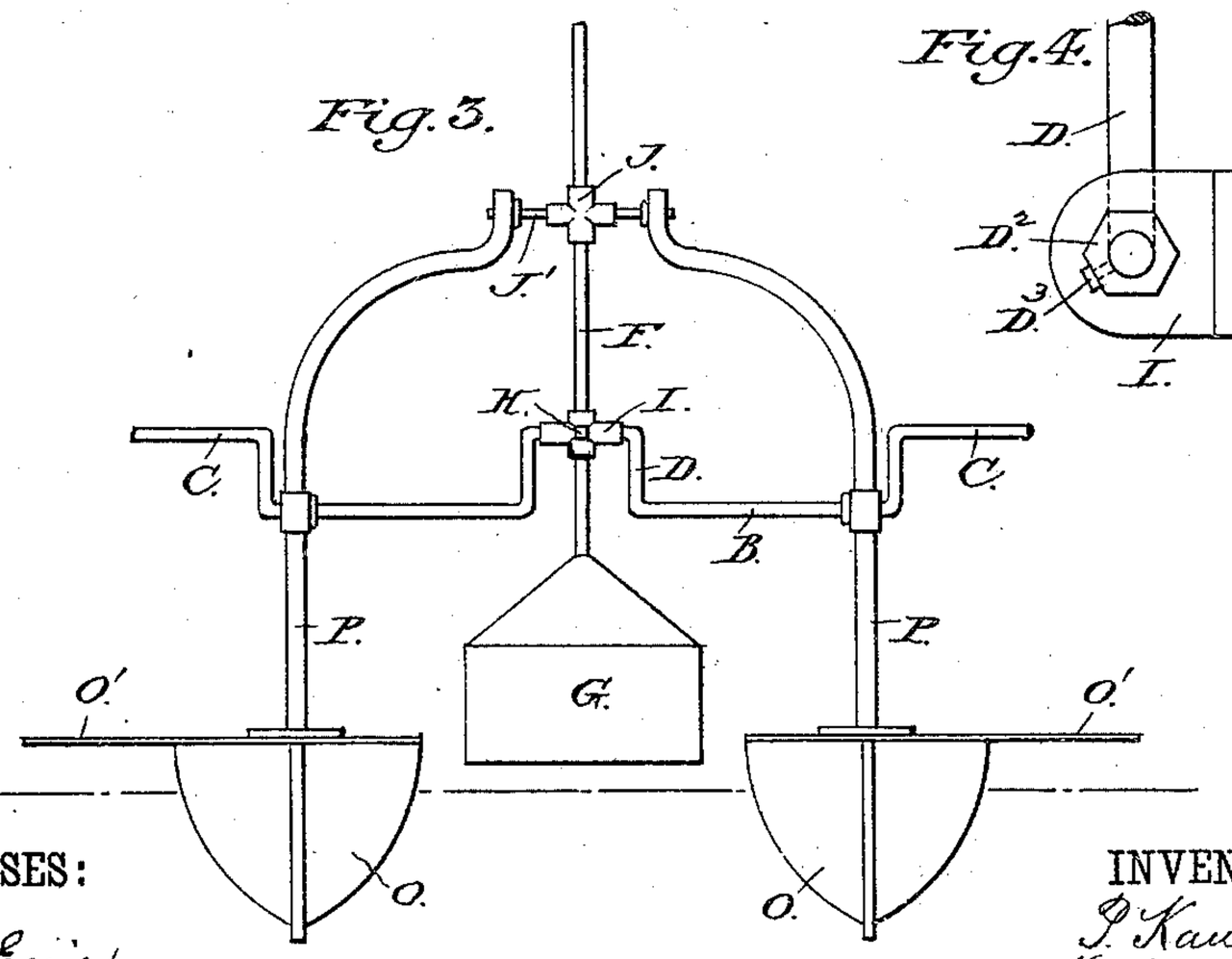

Fig. 4.

WITNESSES:

John A. Ellis.
C. Sedgwick

INVENTOR:

P. Kaul
K. Kaul

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

PIUS KAUL AND KARL KAUL, OF BROOKLYN, NEW YORK.

PROPELLER FOR SHIPS, &c.

SPECIFICATION forming part of Letters Patent No. 368,534, dated August 16, 1887.

Application filed February 5, 1887. Serial No. 226,694. (No model.)

To all whom it may concern:

Be it known that we, PIUS KAUL and KARL KAUL, subjects of the Emperor of Germany, and at present residing in Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Propeller, of which the following is a full, clear, and exact description.

The object of our invention is to provide a new and improved propeller which is simple and durable in construction and very effective in operation.

The invention consists in the construction and arrangement of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a boat provided with our improvement. Fig. 2 is a vertical cross-section of the same. Fig. 3 is an end elevation of our improvement applied to a catamaran, and Fig. 4 is an enlarged front elevation of the device for adjusting the propelling-rod and the blade.

Our improved propeller can be adapted to all kinds of boats, ships, and steamers, but is preferably applied to row-boats, as shown in Figs. 1 and 2, or to catamarans, as illustrated in Fig. 3.

The row-boat A, of any approved construction, is provided on each side with suitable bearings for the shafts B, each provided with the crank-arm C on the inside of the boat and with a crank-arm, D, on the outside of the boat A.

The motive power, which may be hand, steam, electric, or other power, is applied in any suitable manner to the crank-arms C, and each crank-arm D supports and operates a propelling device, E, on each side of the boat.

The propelling device consists of a rod, F, carrying on its lower end the blade G, and is adjustably secured by the set-screws H to the bearing or journal I, loosely mounted on the crank-arm D between a fixed collar, D′, and the collar or nut D^2, held on the crank-arm by the set-screw D^3.

The upper part of the rod F passes loosely through a guide, J, turning on the standard K, secured to the boat A, and provided with two collars, K′, between which the said guide J is held. The upper end of the rod F carries a nut or collar, L, which prevents the rod F from slipping through the guide J in case the set-screws H on the bearing I become loose.

The operation is as follows: The crank-arms C are turned by suitable power in the direction of the arrow *a*′, whereby the rods F and their blades G receive rotary motion, so that the blades G on the forward stroke are lifted out of the water, as shown in dotted lines in Fig. 1, and remain out of the water until the forward stroke is completed, and as soon as the crank-arms D commence the return-stroke, then the blades G pass into the water and remain in the same, thus propelling the boat until the return-stroke is completed. The movement of the rods F and the blades G is caused by the crank-arms D and the guides J, which are the fulcrums for both rods F, and also permits a sliding motion of the rods F as the latter pass loosely through the guides J. It will thus be seen that the full force is applied to propelling-blades G at the return-stroke when the blades pass through the water, and only a small amount of power is necessary on the forward stroke, as the blades G are then out of the water and very little resistance (only that of the atmospheric air) is offered to the blades G. The blades G are deepest in the water when the crank-arms C and D are in a vertical position.

In Fig. 3 we show the device applied to the catamaran N, which is provided with the usual two boats or floats, O, between which operates only one rod, F, carrying the propelling-blade G. The shaft B carries in the middle the crank-arm D and on its ends the crank-arms C. The rod F is secured to the bearing I, held on the crank-arm D, and the rod also passes through the guide J, turning on the shaft J′, mounted on the standards P, erected on both floats O, and also forming the bearings for the shaft B. The floats O are provided with platforms O′, on which the operators stand, for turning the crank-arms C in case the catamaran is to be propelled by hand-power.

Any number of propellers may be secured to one boat. Instead of the crank-arms C, we

may apply pulleys or gear-wheels if the boat is to be driven by steam-power.

The rod F and its blade G can be adjusted in the bearing I by the set-screws H so as to correspond to the depth of the water in which the blades are intended to go, according to the weight in the boat.

We are aware that it is not new to connect a vertical paddle to a revolving crank and to provide an upper guide through which the handle of the paddle slides as its lower end revolves with the crank; and we do not claim this, broadly, but only the special combination of parts in which the coupling I and set-screws H permit the paddles to be adjusted to the depth of the water and the swiveling-guide J at the upper end of the paddle.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

In a propeller, the combination, with the shaft B and the crank-arm D, attached to the said shaft, of the bearing I, held to turn on the said crank-arm D, the rod F, held in the said bearing I, the set-screws H, for holding and adjusting the said rod F in the said bearing I, the blade G on the lower end of the said rod F, the nut or collar L on the upper end of the said rod F, the guide J, through which passes loosely the said rod F, and the fixed arm K, on which turns the said guide J, substantially as set forth.

PIUS KAUL.
KARL KAUL.

Witnesses:
THEO. G. HOSTER,
C. SEDGWICK.