

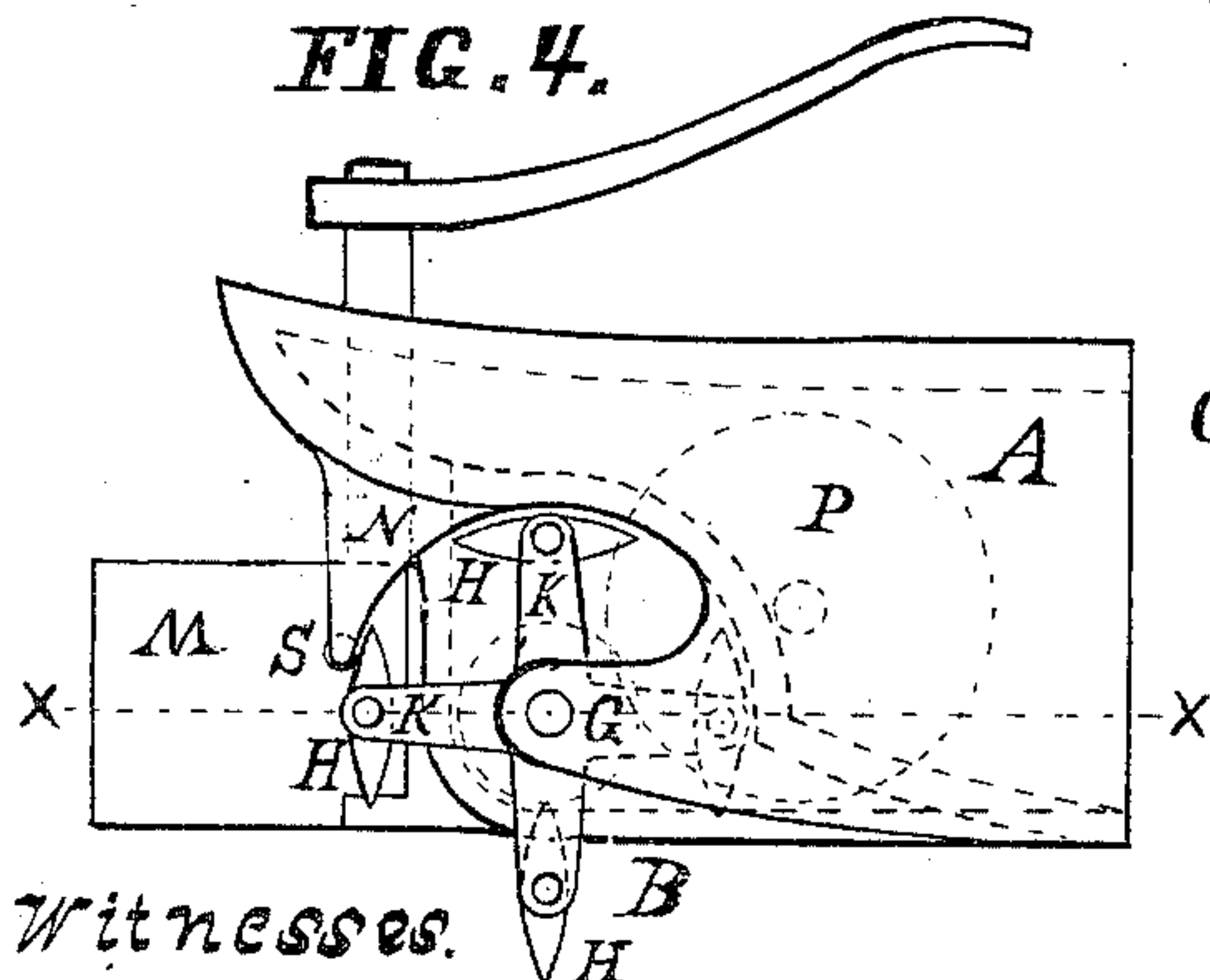
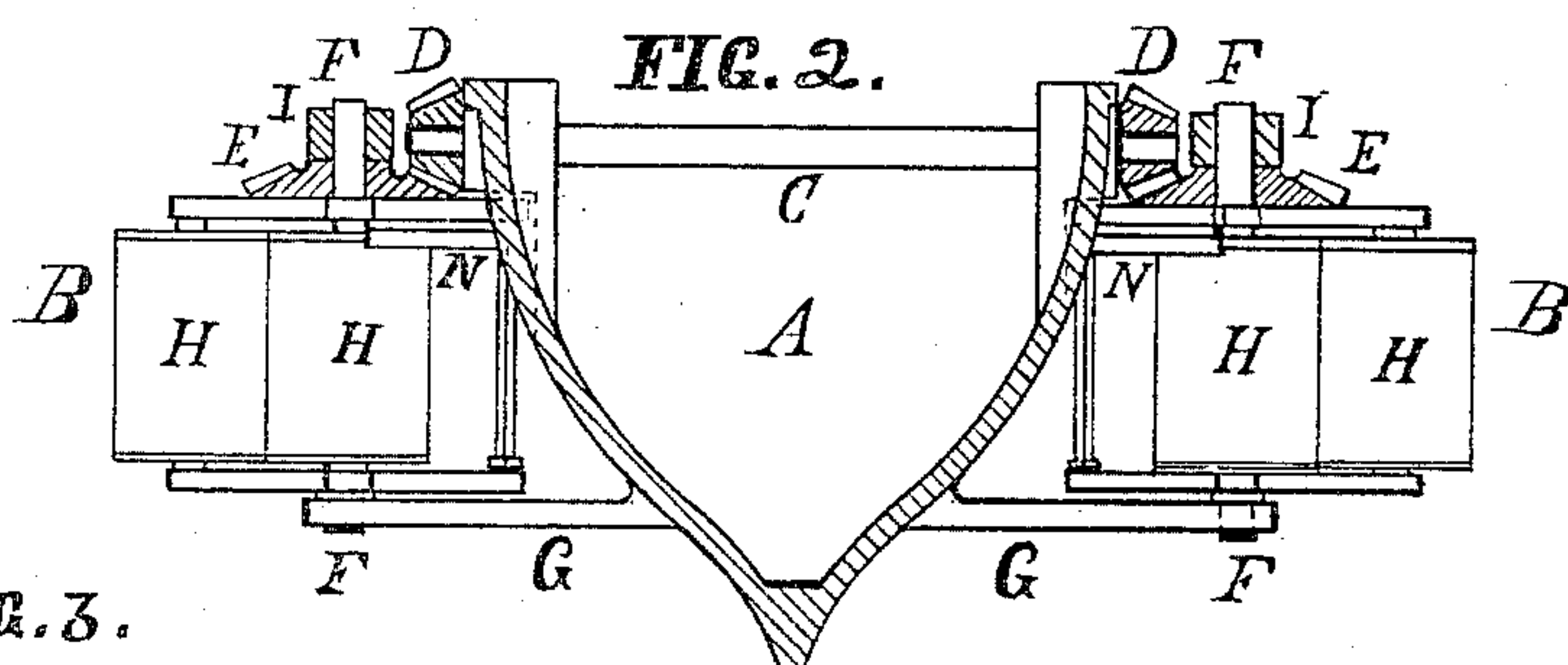
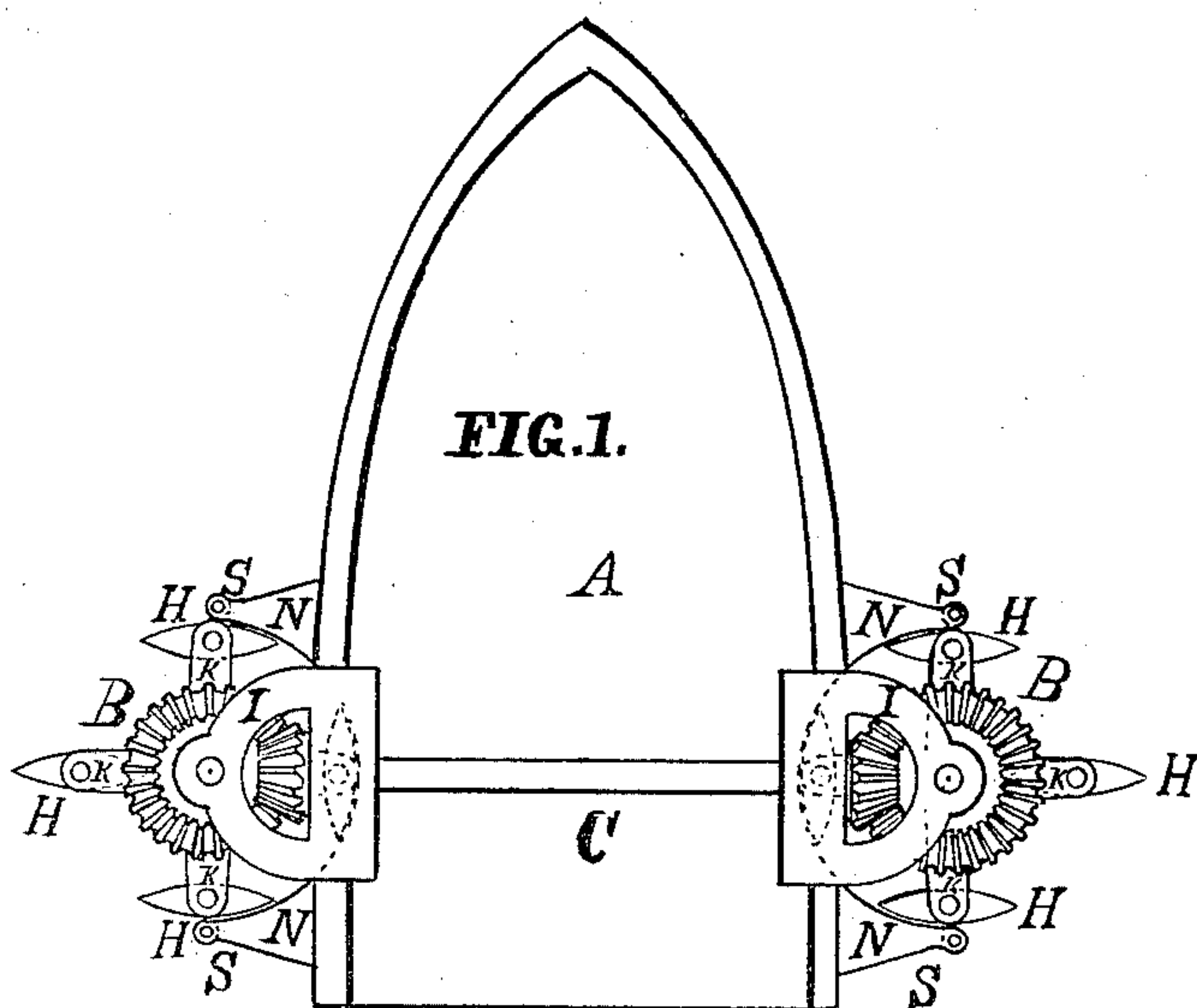
(No Model.)

J. S. ALLEN.

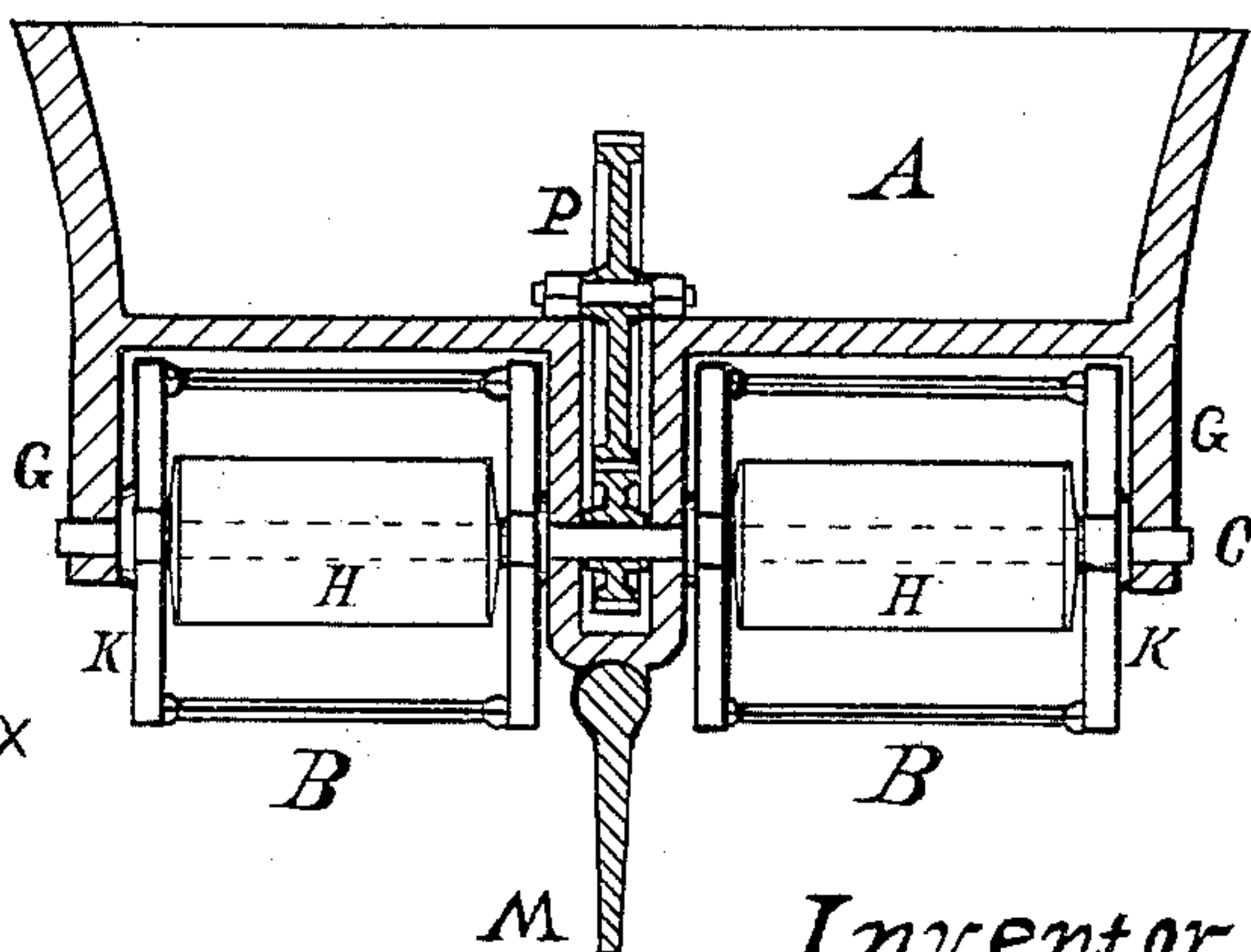
PADDLE WHEEL FOR PROPELLING VESSELS.

No. 318,408.

Patented May 19, 1885.



Witnesses.
Wm. Hecker
Wm. S. Carr



Inventor
John S. Allen

UNITED STATES PATENT OFFICE.

JOHN S. ALLEN, OF YONKERS, NEW YORK.

PADDLE-WHEEL FOR PROPELLING VESSELS.

SPECIFICATION forming part of Letters Patent No. 318,408, dated May 19, 1885.

Application filed July 22, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. ALLEN, of Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Paddle-Wheels for Propelling Vessels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 represents a plan view of my improved paddle-wheel as applied to the sides of a boat. Fig. 2 is a vertical section taken through the driving-gears of Fig. 1. Fig. 3 is a cross-section of one of the paddles. Fig. 4 represents a side elevation of a boat with my improved wheels applied horizontally at the back end of a boat; and Fig. 5 is a horizontal section of Fig. 4, taken on the line X X.

My improvement relates to feathering paddle-wheels, the blades or paddles of which are hung on trunnions formed on each end and center of said paddles, and hung on said trunnions in the outer ends of arms, or the periphery of the wheel, in such manner that the broad sides of paddles act on the water at one side of the wheel and the edges at the other side while returning again, thereby giving the least resistance and presenting the largest surface in the best manner for propelling the boat.

My improvement consists in the simple and economical construction, application, and operation of wheels, either at the sides or back end of boat, with their axis in either vertical or horizontal position.

In the drawings, A is the boat; B B, the paddle-wheels, and C C the driving-shaft, to which power may be applied by any of the well-known methods.

D D are bevel-pinions on both ends of the driving-shaft, which work in corresponding gears, E E, Fig. 2, on the vertical wheel-shaft F F, on which the wheels are secured and revolve, said wheel-shafts being supported at both ends by suitable brackets, I I and G G, projecting out from the sides of the boat, as seen in Fig. 2, or from the back of boat, as seen in Figs. 4 and 5.

H H H are the paddles, which are hung on arms K K, or any other suitably-constructed wheel-frame, on which the paddles may be sup-

ported at each end and rotate on their trunnions freely and independently of each other. Any number of paddles may be used to fill the wheel in such intervals as will permit them turning on their bearings without the edges of paddles interfering with each other. Fig. 3 is a cross-section of one of the paddles H, (enlarged.)

J J are the ribs on each end and sides, the trunnion on which they swing being represented by a dotted circle. The edges of ribs J J are struck from the center of the wheel, and form bearings to work against guides N N at the upper end of the wheel, which guides extend half-way round on the side next the boat. Said guides have rollers S S in their ends, which rollers prevent the edges of paddles from catching on the ends of said guides N N.

It will be seen that by applying power and rotating the shaft C, with its bevel-pinions acting on the gears E on the wheel-shafts, the wheels will be turned in the same directions, the paddles acting against the water with their broad sides during the outer half-revolution, when they are free from the guides N N, thereby propelling the boat. I have found that the paddles retain a position at right angles with the direction in which the boat moves by the simple action against the water, and therefore at all times present the edges of paddles to the guides N N, as represented in Fig. 1, this being due to the shape and hanging the paddles on central trunnions, thereby not requiring the usual complicated guides in other wheels. The paddles H H, turning freely on their trunnions, remain at right angles with the radius of wheel during the part revolution in contact with the guides N N, thereby moving forward with the least resistance to the progress of the boat.

In Figs. 4 and 5 I have represented the same wheels hung on a horizontal shaft, C, on the back end of a boat, the outer ends of said shaft being supported by brackets G G. In the center an extension of the boat forms a bearing for the rudder. The wheel-shaft, passing through said extension, has a driving-pinion secured to its center, in which pinion the gear-wheel P works, and to which latter wheel power may be applied in the usual way. In Fig. 4 it will be seen that the paddle-guide N

is placed at the inner ends of the boat, near the rudder, extending through the upper half-arc of a circle, through which are the paddles move with their edges forward, and, as they
5 enter the compact water under the boat, act against it with their broad sides through the lower half-arc of the revolution.

It will be seen that my wheels may be placed in one or more sets at the sides of boats, as
10 shown in Figs. 1 and 2, as well as at the back end; that they may be used vertically or horizontally in either place.

Having described my invention, what I claim as novel, and wish to secure by Letters
15 Patent, is—

In a feathering wheel, the paddles H H, rotating freely on central trunnions, presenting either side to the water, when passing the lower half-arc of a circle, in combination with guides N N, against which either side of the
20 paddles may move through the upper half-arc of a circle.

Witness my hand this 17th day of July, 1884.

JOHN S. ALLEN.

In presence of—
THEODORE FITCH,
WM. HUKERT.