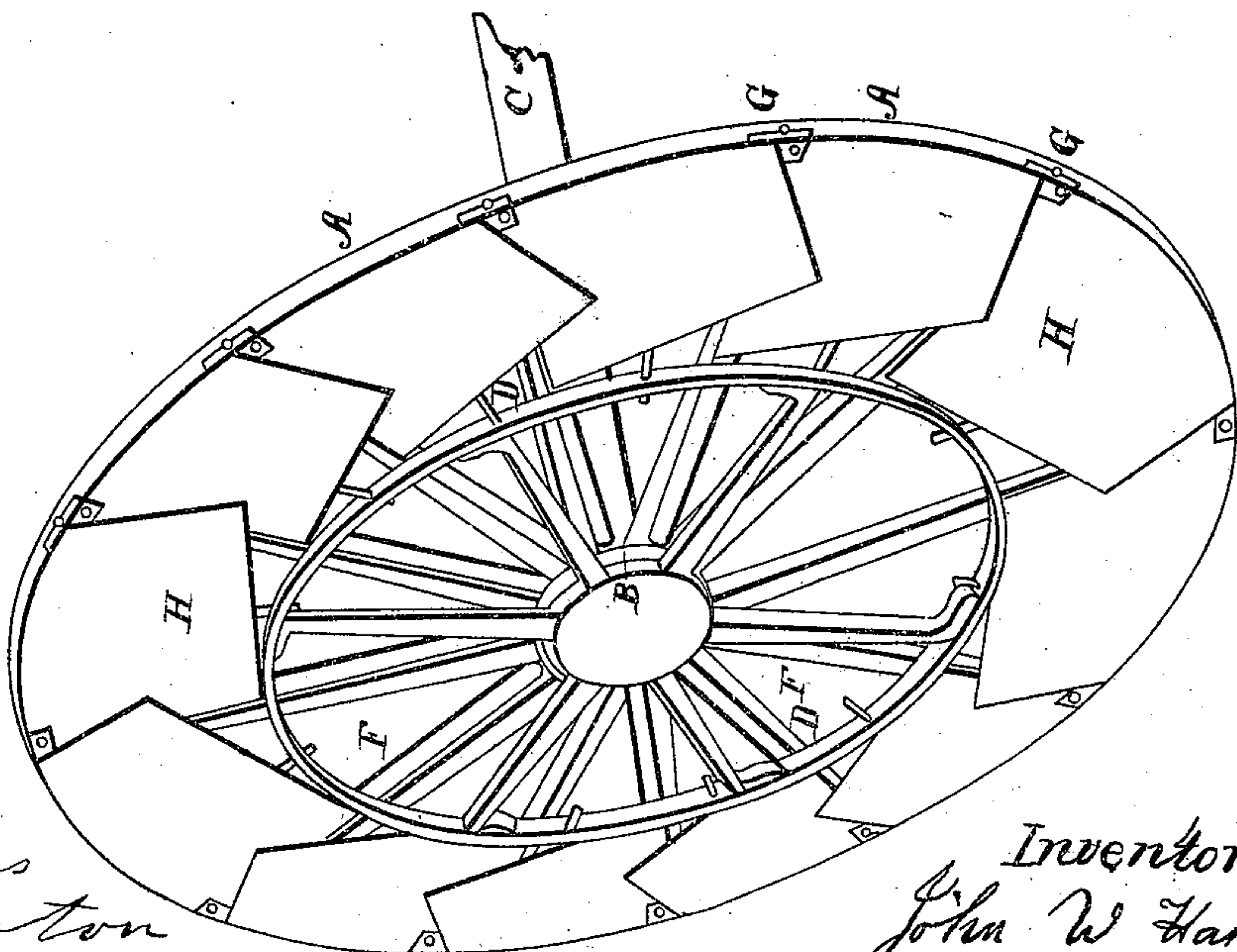
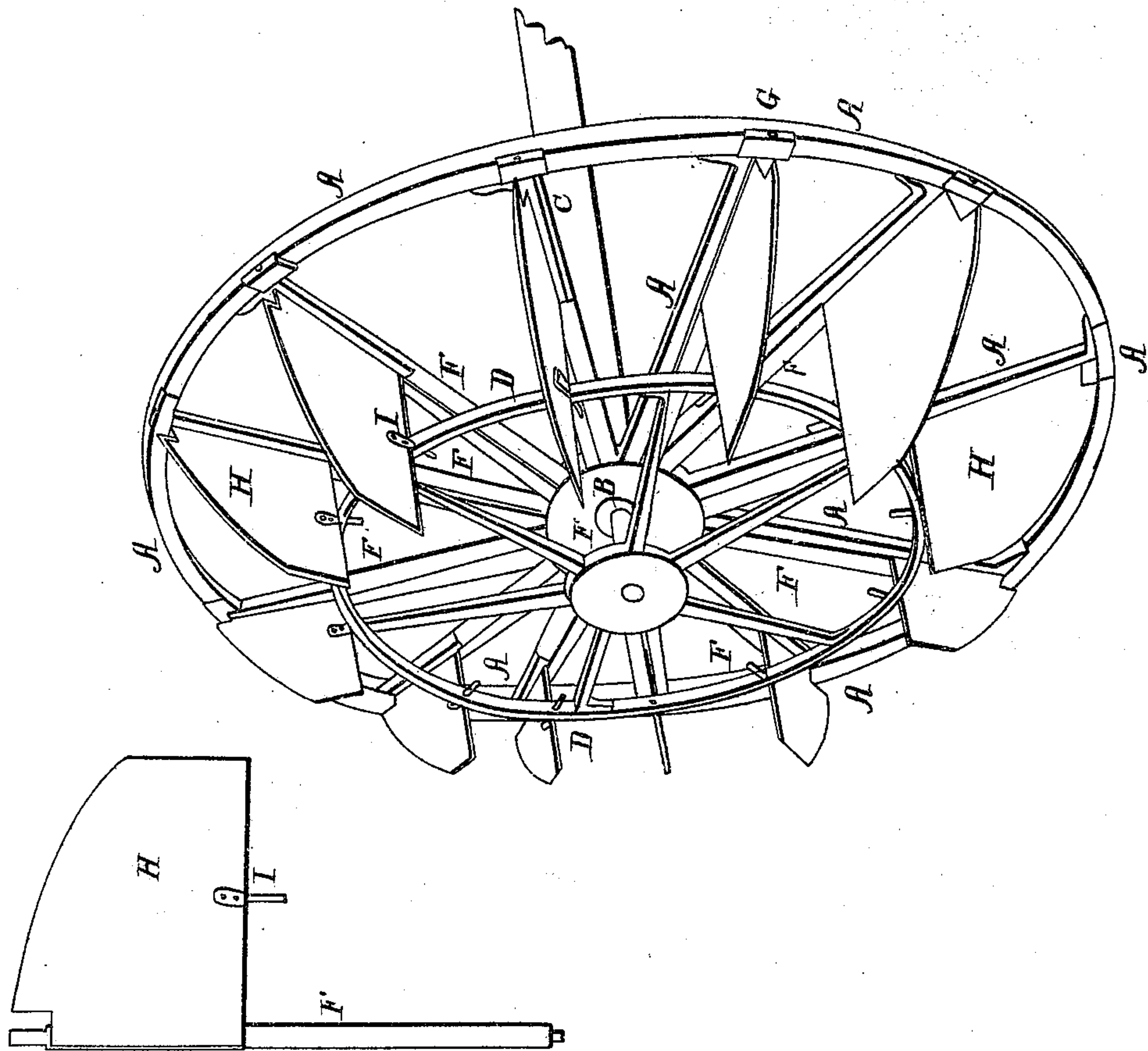


*J. W. Harris.*  
*Paddle Wheel,*  
*N<sup>o</sup> 24,300.* *Patented Jun. 7, 1859.*



*Inventor;*  
*R. F. Stevens*  
*B. H. Norton*

*Inventor;*  
*John W. Harris.*



# UNITED STATES PATENT OFFICE.

JOHN W. HARRIS, OF DURHAMVILLE, NEW YORK.

## IMPROVED PADDLE-WHEEL.

Specification forming part of Letters Patent No. 24,300, dated June 7, 1859.

*To all whom it may concern:*

Be it known that I, JOHN W. HARRIS, of Durhamville, in the county of Oneida and State of New York, have invented a new and useful Improvement in Paddle-Wheels for Boats; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification.

The nature of my invention consists in constructing paddle-wheels for boats in such a manner that the paddles may be folded laterally upon the frame and the frame-work projecting beyond the side of the boat be retracted or extended at pleasure while the boat is in motion, the object being to prevent the contact of the wheel with passing objects or the sides of canal-locks.

The construction and operation of my invention are as follows.

A is the main frame-work of the wheel, which is connected by the hub B to the main shaft C.

D is an additional circular frame-work connected to the end of the shaft E. The shaft C is made hollow, and the shaft E, being of smaller diameter, is passed through it, and the larger furnishes a support for the smaller.

The two frame-wheels A and D may be made of iron and having arms of iron firmly connecting the rims with the hubs. In the larger wheel A are placed the shafts F, the outer ends of which are sustained in boxes G on the rim of the wheel and the inner end sustained in bearings in the edge of the hub. These shafts revolve in the bearings at their ends. To these shafts F are connected the paddles H by being firmly bolted through their ends. The paddles are made of boiler-iron plates. The outer edges of the paddles are cut circular, so that when closed or lying flatwise upon the frame A they will conform to circle of the main rim. The inner edges of the paddles are connected to the rim of the lesser frame-wheel by pins I passing, as shown. The lesser shaft E, passing through the main shaft C, is connected in the central part of the boat with convenient machinery by which the engineer may force it outward

or inward at pleasure while the boat is running or when stationary. This movement may be made by hand-levers or by the power of the driving machinery. The operation is such that when the lesser frame-wheel is forced outward to the full extent the paddles will stand in position to act upon the water when the wheel is in motion, and when it is drawn inward the two frame-wheels will be drawn together. The paddles will be closed upon the frame overlapping each other, at which time the wheel will project beyond the side of the boat no more than the thickness of the frame, or in case a recess be made in the side of the boat equal at least to the thickness of the wheel, there will then be no projection of any portion of the paddle-wheel beyond the side of the boat. When the paddles are extended they will enter the water first at a point near the rim of the large frame-wheel, owing to the circular form of the outer edges, causing far less commotion in the water than when the straight paddle is used.

The principal object gained by the invention is the closing or withdrawing of the wheel from projecting beyond the sides of the vessel while passing other boats when approaching the shore or entering locks. It is also found that the peculiar form of the outer edges of the paddles enables the boat to pass through sheet-ice which could not otherwise be broken by the wheel.

What I claim as my invention, and wish to secure by Letters Patent, is—

Constructing paddle-wheels for boats in such a manner that the paddles may be folded laterally upon the frame and the wheel thereby withdrawn from projecting beyond the sides of the boat, or extended at pleasure, whether the boat be in motion or at rest, the paddles H being connected to the frame-work A and D, substantially as described, and their outer edges of the form shown, the whole operating substantially as set forth.

JOHN W. HARRIS.

Witnesses:

R. F. STEVENS,  
J. C. K. FONAN.