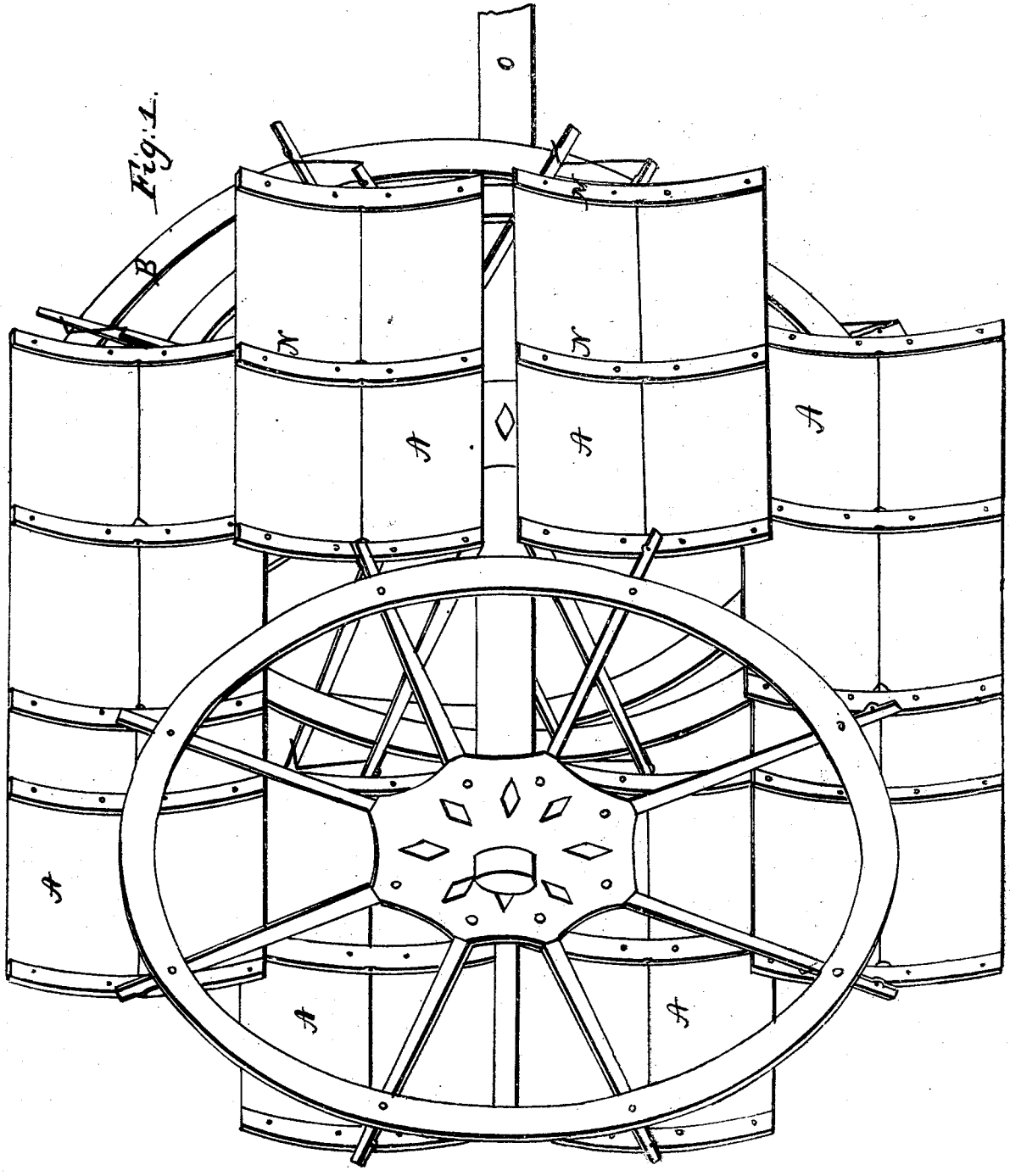
Sheet 1. 3 Sheets

A. H. Brown.

Paddle Wheel.

No. 9,854. Patented July 9, 1853

Fig. 1.



Sheet 2. 3 Sheets.

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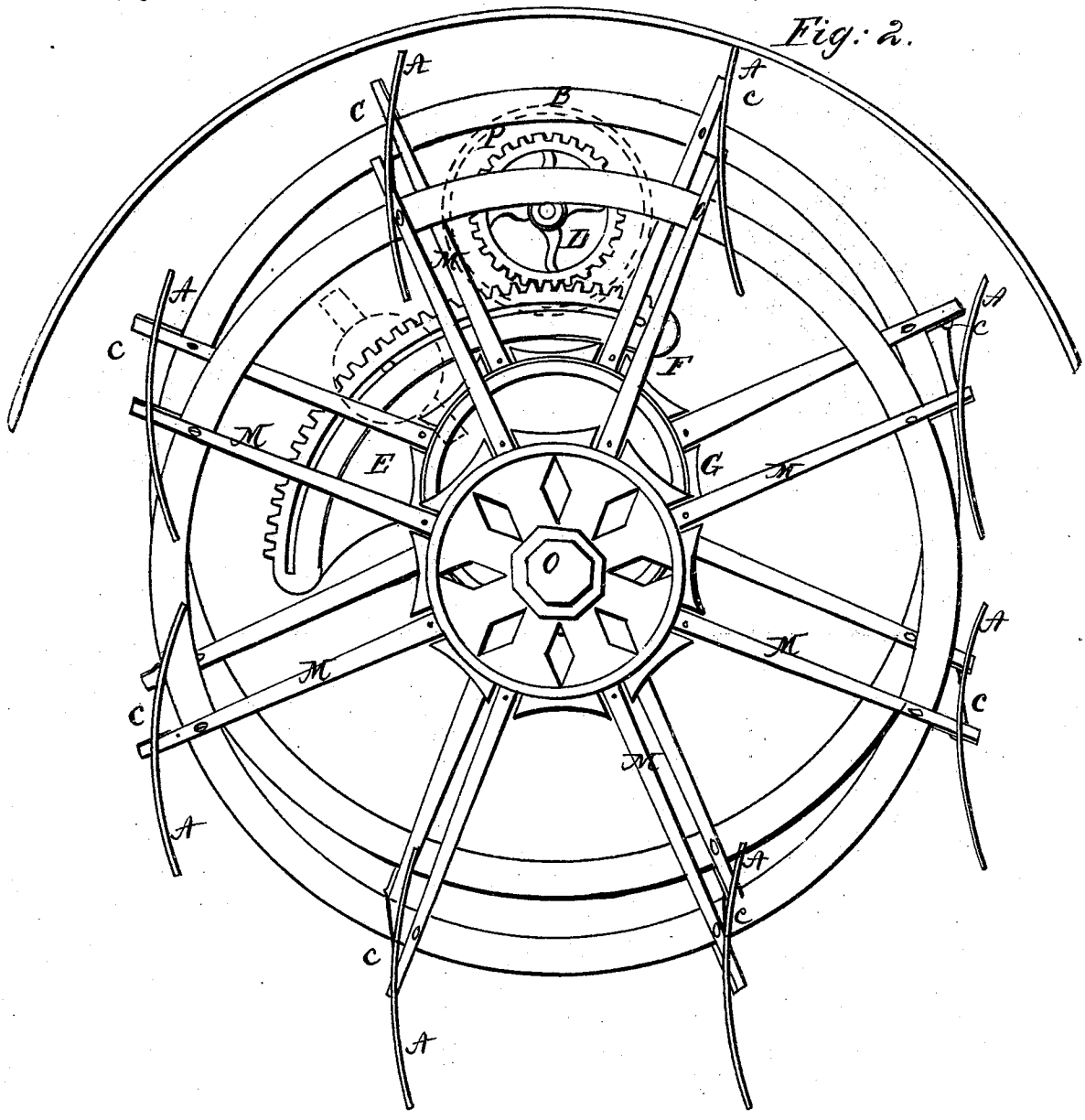
Fig: 2.



Sheet. 3.3. Sheets.

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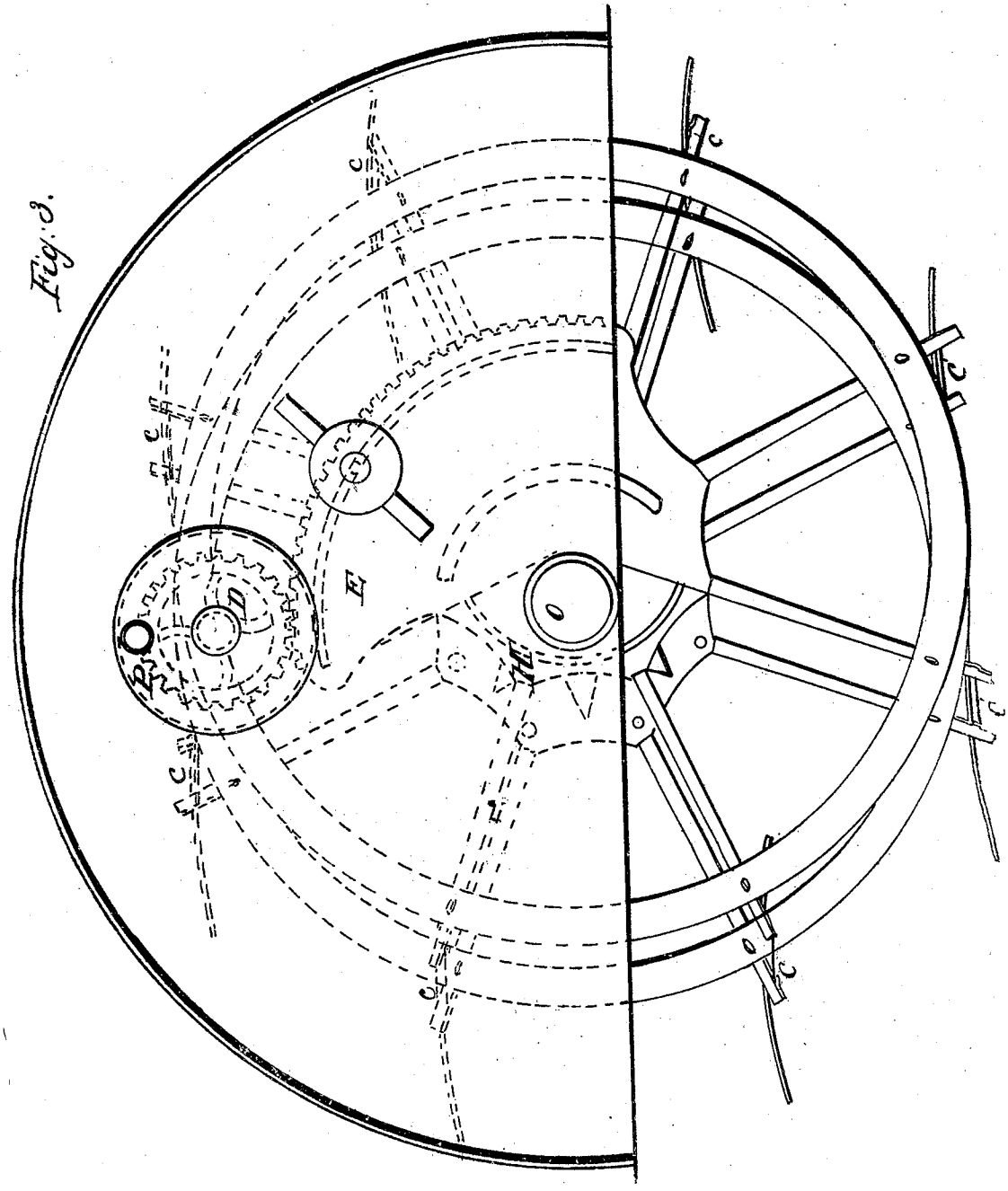
Fig. 3.



UNITED STATES PATENT OFFICE.

ALEXANDER H. BROWN, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN FEATHERING PADDLE-WHEELS FOR STEAMERS.

Specification forming part of Letters Patent No. **9,854**, dated July 19, 1853.

To all whom it may concern:

Be it known that I, ALEXANDER H. BROWN, of the city and county of Washington, and District of Columbia, have invented a new and Improved Paddle-Wheel for Propelling Steam-Vessels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical view; Fig. 2, a sectional view; Fig. 3, a longitudinal view of the paddles.

A A A A represent the curved paddles as held in a vertical position by the guide-wheel B, Fig. 1, through the action of the crank.

c c c c, &c., Fig. 2, represent the pinion D geared into the rack-cam E at the point from which the regulator of the paddles commences its action in order to adjust the paddles to any desired angle.

P, Fig. 3, represents a drum on the inside of the boat connected with the pinion and on the shaft of the same, over which drum a band or rope passes, and which is connected with the steering-wheel of the vessel in such a manner that by the movement of the steering-wheel the drum and pinion may be made to revolve, whereby the angle at which the paddles enter the water may be instantly and readily changed.

F, Fig. 2, is an eccentric cast upon the rack-cam E and turned perfectly true and smooth in order to act as a journal for the collar or flange G, which is also cast upon the hub or plate H, Fig. 3, of the guide-wheel B, which collar is also turned and adjusted to the outside convex surface of the eccentric F in order to play freely around.

C C C C are the cranks on the paddles and represented in a vertical position and secured to the arms of the guide-wheel with collars and bolts passing through the arms, similar collars and bolts being also used upon the end of the arms *m m m m*, &c., of the main wheel in order to hold the paddles in any position in which they may be placed by the action of the regulator.

n n n n, &c., are bars to which the paddles are secured to the crank-shaft.

The length of the arms of the crank must agree with the elevation of the center of the eccentric above the center of the main shaft.

O, Figs. 1 and 3, represents the pinion D at the opposite end of the rack-cam E, and from having caused the rack-cam to travel one-fourth of the diameter of the wheel it will have caused the paddles A A A A, &c., to assume a horizontal position.

In order to adjust the paddles to any desirable angle it is only necessary while the boat is either stationary or in motion to loosen the bolt screwing the rack-cam to the wheel-house by one turn of the nut and turn the crank attached to the pinion D, Fig. 2, by which means the paddles can be thrown into any position in an instant and secured to that point by a turn of the nut upon the rack-cam bolt. In case of the loss of the rudder of the vessel, or if the vessel does not readily obey the rudder, the band or rope passing around the drum P and connected with the steering-wheel of the vessel will cause the revolution of the pinion D, whereby the angle at which the paddles enter the water will be changed. By this means the vessel can be easily steered.

The advantages possessed by my paddle-wheel in addition to those possessed by other adjustable wheels, are, first, the paddles having the curved form have a much greater propelling power than an ordinary flat paddle, as the paddle acts upon the water like the curved foot of the duck. This form of paddle has been applied to the stationary paddle, but its application has failed in that case, because what is gained by the curved paddle in entering the water is lost by lifting the water as it leaves. The advantages of the curved paddle can only be obtained in connection with the adjustability and feathering of the paddle-wheel.

By my combination of the rack-cam and pinion with the eccentric the angle at which the paddle enters the water may be changed with greater facility and rapidity than by any other arrangement before described. The paddles being thus rendered so easily adjustable by combining the drum with the pinion and rack or the adjusting apparatus, I have new means of saving the vessel in case of accidental loss of the rudder. The

drum and paddle adjusting machinery being connected with the steering-wheel in the manner above described is instantly converted into a steering apparatus by causing a variation between the two wheels in the angles at which their paddles enter the water.

The same apparatus may be also applied to assist the rudder to turn the vessel more suddenly.

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

1. The combination of the pinion D, rack-cam E, and steering-drum P with the eccentric F, for the purpose of adjusting the paddles and converting them into a powerful steering apparatus.

2. The combination of the curved paddle with any apparatus for adjusting and feathering the same.

A. H. BROWN.

Witnesses:
JOHN L. HAYES,
F. S. MYER.