

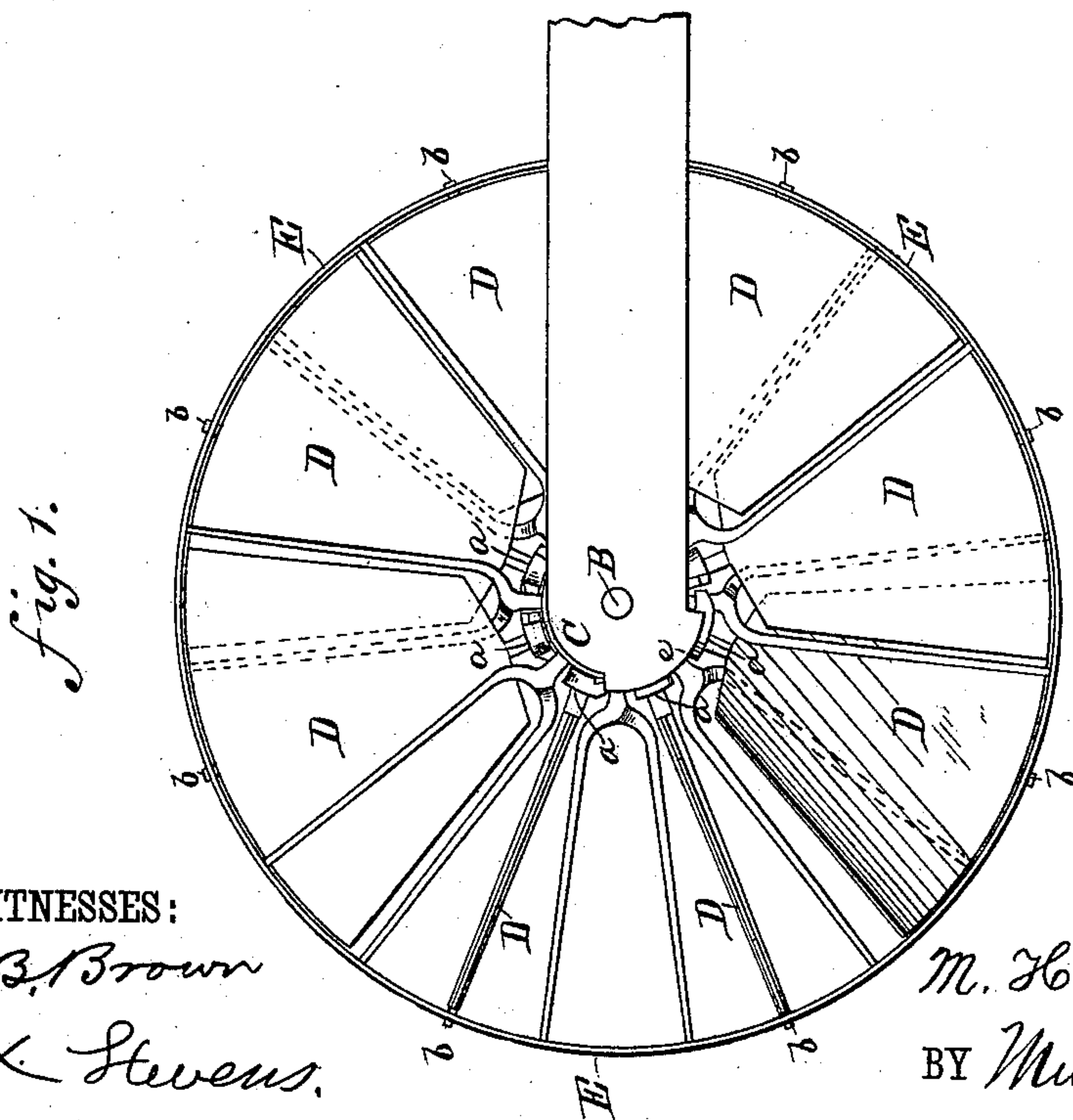
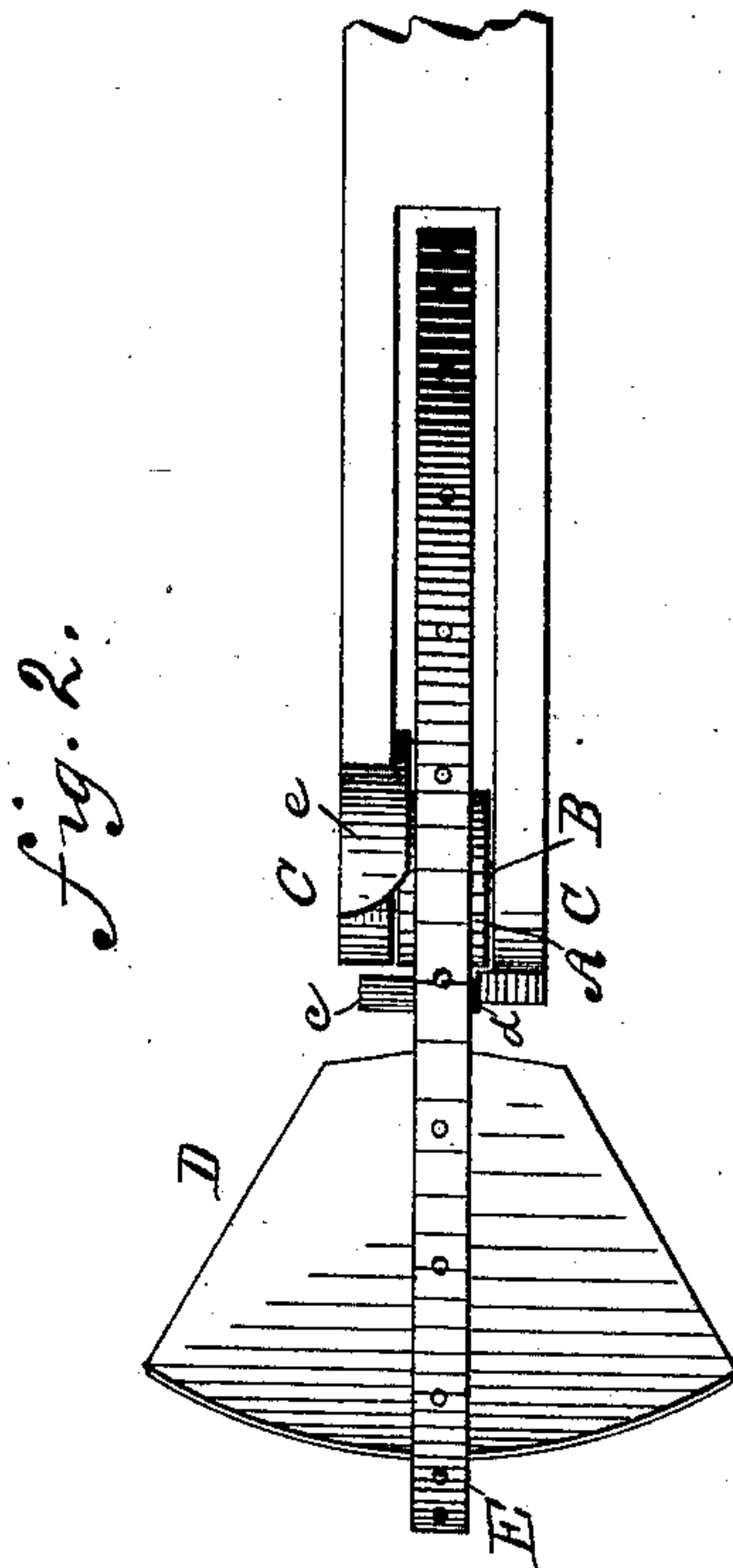
(No Model.)

2 Sheets—Sheet 1.

M. H. DEPUE.
FEATHERING PADDLE WHEEL.

No. 299,752.

Patented June 3, 1884.



WITNESSES:
H. B. Brown
W. X. Stevens.

INVENTOR:
M. H. Depue
BY *Munn & Co*

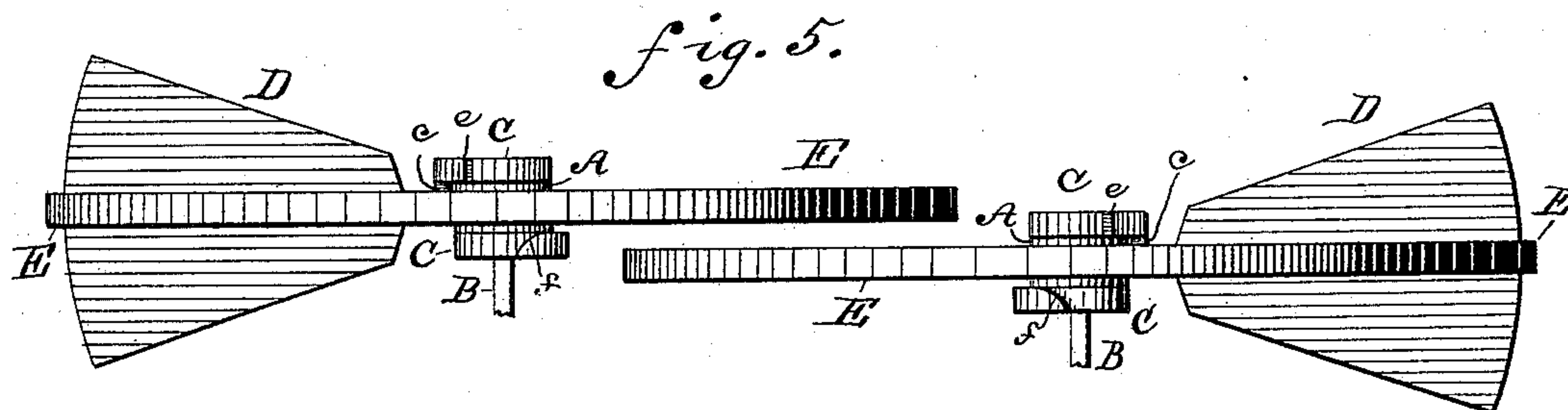
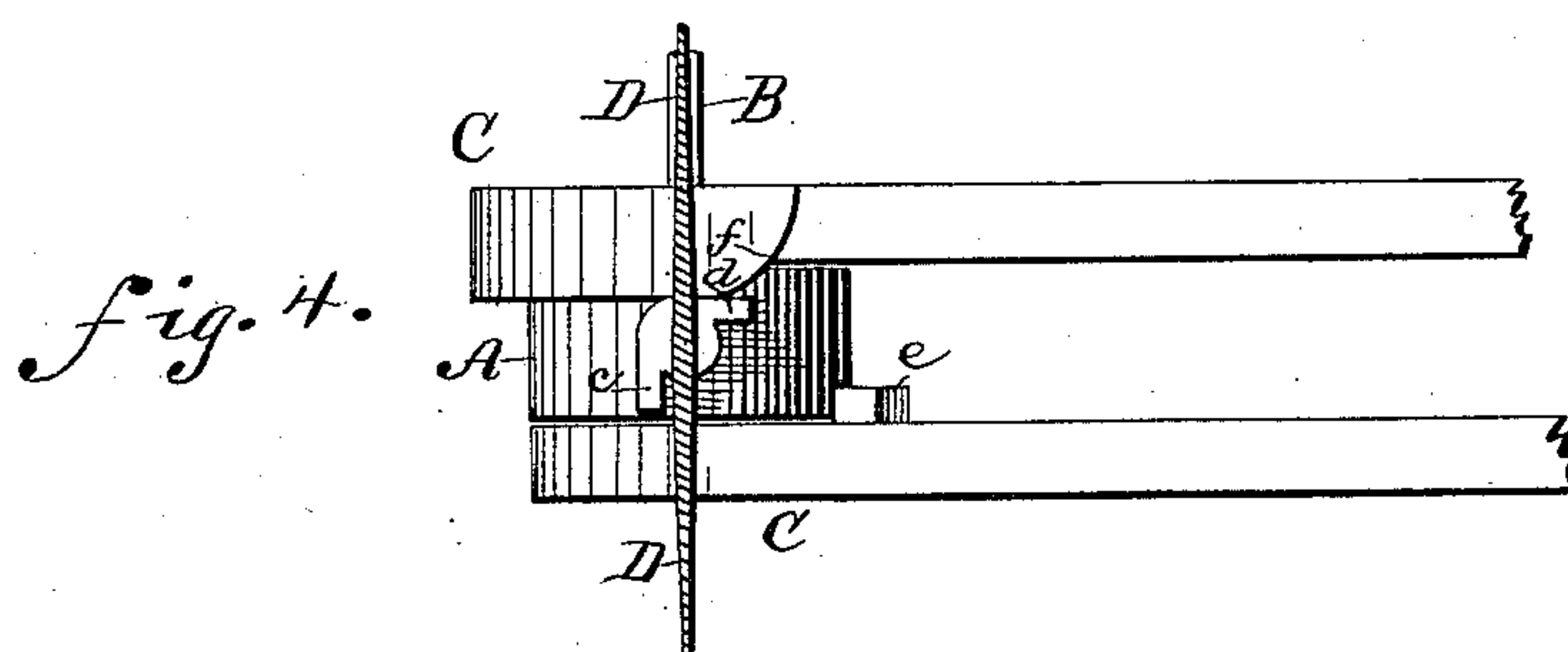
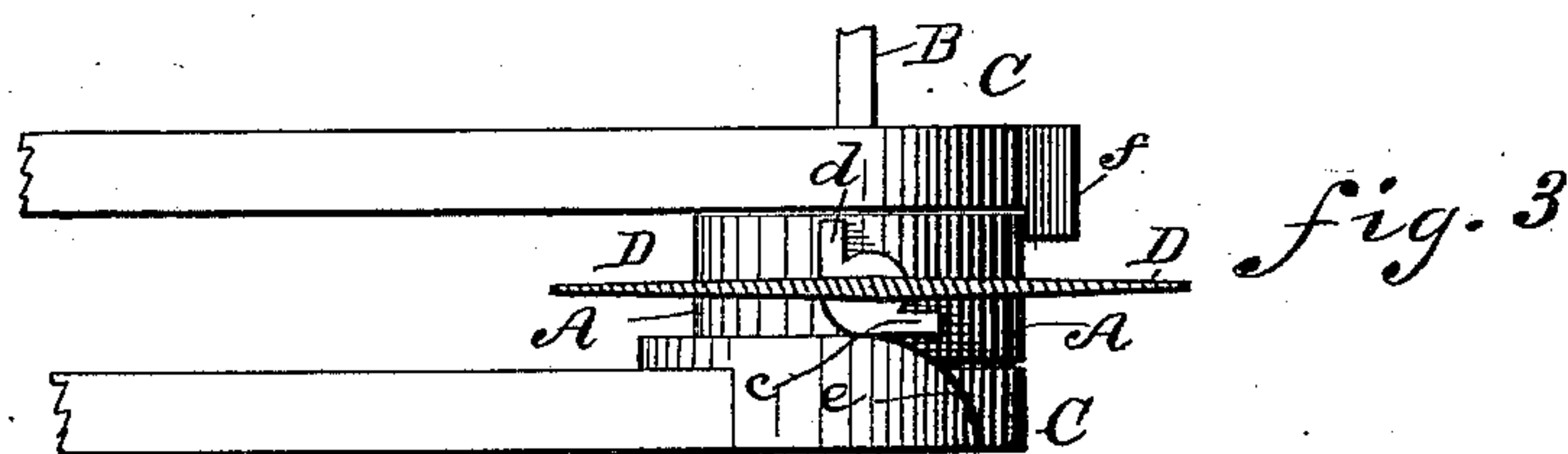
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

MICHAEL H. DEPUE, OF HOMER, ILLINOIS.

FEATHERING PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 299,752, dated June 3, 1884.

Application filed March 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL H. DEPUE, a citizen of the United States, residing at Homer, in the county of Champaign and State of Illinois, have invented certain new and useful Improvements in Feathering Paddle-Wheels, of which the following is a description.

This invention relates to that class of paddle-wheels which are designed to run edgewise wholly in one element—that is, either in the air or in the water; and the object of my invention is to give the desired direction to the planes of the paddles at all points of the revolution of the wheel containing them.

The invention is intended, primarily, as a propeller for a flying-machine; but the same principle may be readily adapted to boat propulsion; or it may be adapted to windmills and to current-water wheels.

The invention consists in the construction and combination of parts forming a feathering paddle-wheel, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of my paddle-wheel, showing a portion of its supporting-frame. Fig. 2 is a side view of the same. Fig. 3 is a transverse vertical section of one paddle, showing the hub of the wheel and the frame; and Fig. 4 is a similar section of a paddle and the hub at right angles to Fig. 3. Fig. 5 is a rear view of two wheels acting in unison.

A represents the hub of the wheel, mounted upon a shaft, B, to turn therewith in bearings C. If the wheel is used as a propeller, it is revolved by any usual power applied to shaft B, and operates by means of its paddles D upon the surrounding air or water, as the case may be. If the wheel is used as a motor, it receives motion from the surrounding air or water acting on its paddles, and gives off the same through the shaft B. Each paddle D is journaled at one end, *a*, in the hub, and at the other end, *b*, in the wheel-rim E. The blade of the paddle is nearly a complete sector, and it is perfectly balanced by being journaled coincident with its central radius. At the end *a* each paddle is provided with two arms, *c* and *d*, one of which, *c*, is parallel to the plane of the blade, and the other, *d*, is at right angles thereto. *e* and *f* are segmental flanges rigidly

fixed to the bearings C, or to some portion of the fixed frame in the same locality. The inner faces of these flanges serve as slideways for the arms *c* and *d* to maintain the blades in a certain position while passing them. Suppose the wheel to be revolved in the direction indicated by the arrow. The arm *d*, striking against the front end of segment *f*, turns the blade across the path of revolution, thereby making it bear against the air to do service. This blade will be so held as long as the arm *d* bears against flange *f*; but when in the revolution of the wheel the arm *c* of the same blade meets the front end of the flange *e*, the arm *d* has passed the segment *f*, and the blade will be turned into the plane of its circle of revolution, thereby being put out of duty. Each succeeding blade is actuated in the same manner. The two flanges *e* and *f* may be as broad or narrow segments as shall be required to cause the blades to do service during as large a part of each revolution as may be desired. I propose to equalize the action of the two sides of the propeller by using two wheels, as shown in Fig. 5, to act in unison. In this case the wheels will revolve in opposite directions to each other, and the directing-flanges *e* and *f* will be arranged to set the vanes to act as paddles when in outer opposite arcs, and to be feathered parallel with each other on their return. In use for propelling a flying-machine, it is intended to place the wheels between the balloon and the car.

I am aware that there are feathering paddle-wheels whose blades are directed by guides on the inner end of each blade, said guides, when in service, being in the central plane of the axis of the blade, and that there are other similar wheels having each two guides at right angles to each other, but located at different distances from the center of the wheel; and I do not claim such as my invention. My guiding-arms are at right angles to each other at equal distances from the center of the wheel, and their working-faces are tangent to the journal of each blade, thus giving the journal a passage between the cams which act upon the said arms to turn the blades.

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

The combination, in a wheel having a rim

and hub, of radial blades journaled therein, the journal of each blade being provided with two transverse arms in the same plane, forming a single right angle on the external faces
5 of the said arms tangent to the journal, the said arms being at equal distances from the center of the wheel, with cams fixed stationarily in the path of the said arms and beside

the path of the journals, said cams being at equal distances from the center of the wheel, 10 as shown and described.

MICHAEL H. DEPUE.

Witnesses:

GARRET L. MORSE,
JOHN W. REED.