F. J. LEISEN.

FEATHERING PADDLE-WHEELS.

No. 184,532. Patented Nov. 21, 1876.

Fig. 1

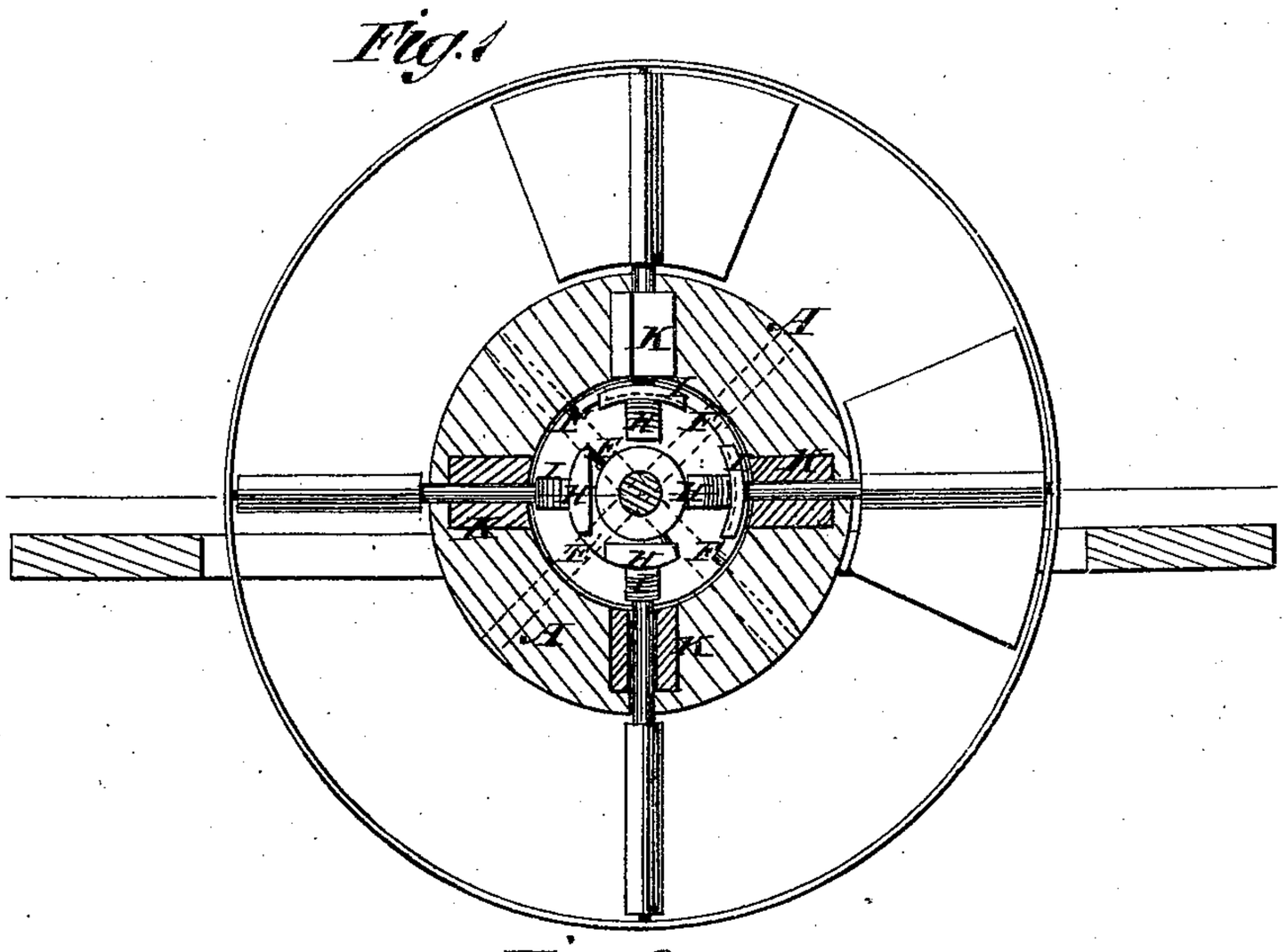


Fig. 2

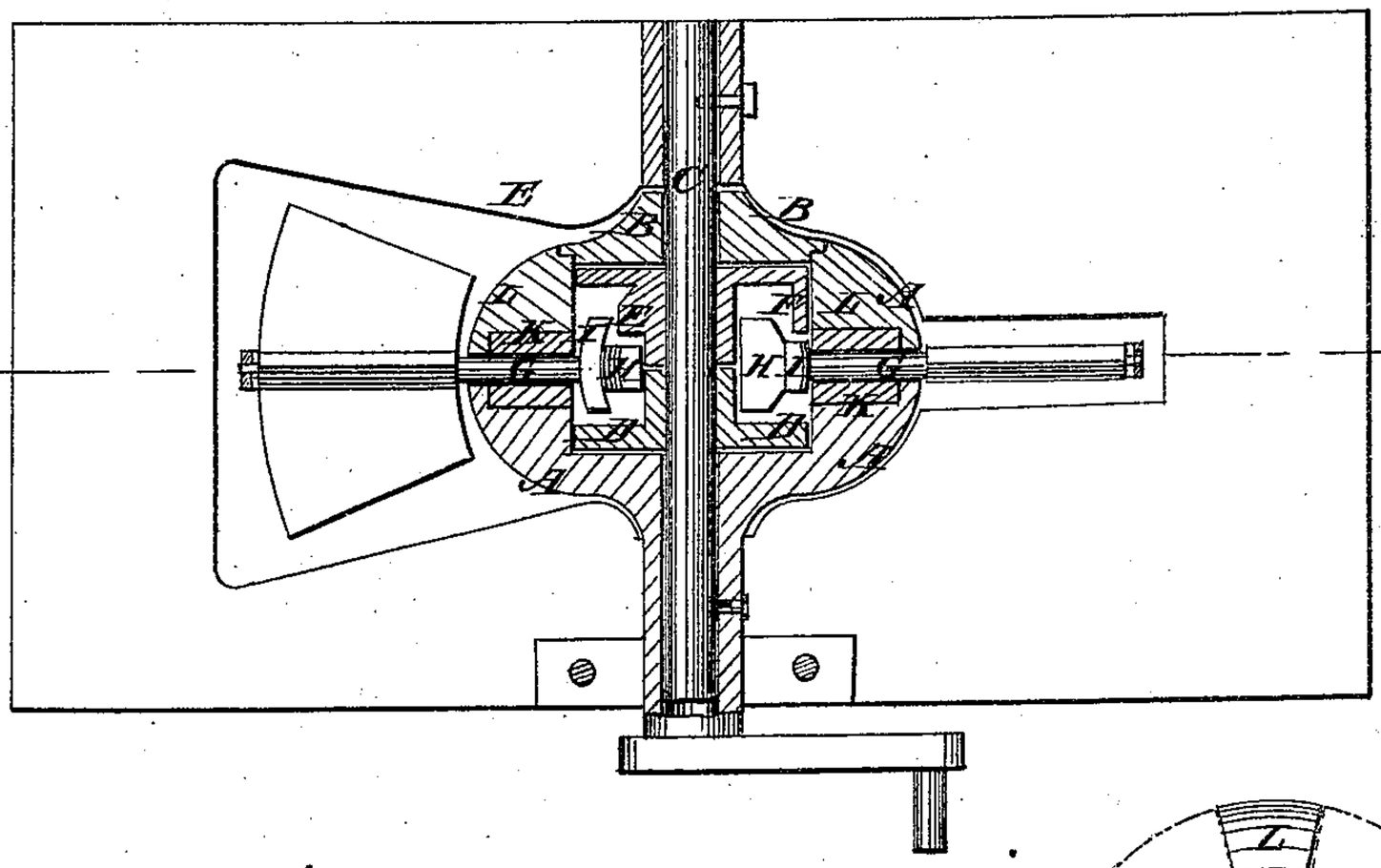


Fig. 3

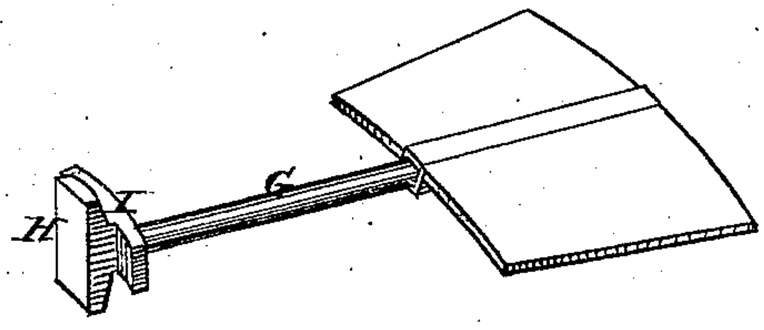


Fig. 4

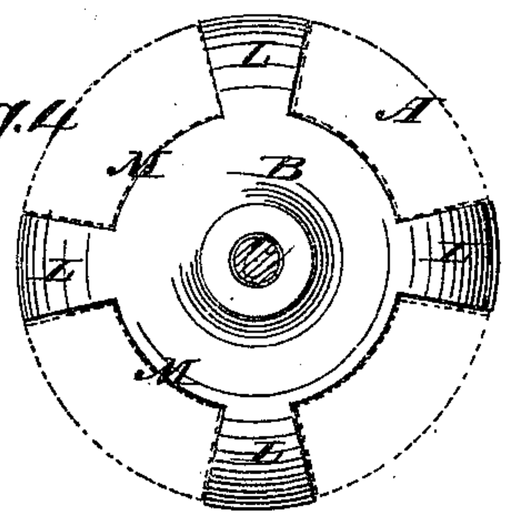
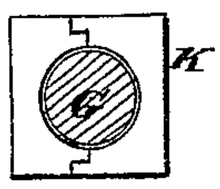


Fig. 5



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANCIS J. LEISEN, OF WOODBRIDGE, NEW JERSEY.

IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. **184,532**, dated November 21, 1876; application filed May 22, 1876.

To all whom it may concern:

Be it known that I, FRANCIS JOSEPH LEISEN, of Woodbridge, in the county of Middlesex and State of New Jersey, have invented a new and improved Feathering Paddle-Wheel, of which the following is a specification:

My improvement in feathering paddle-wheels consists of a contrivance of stationary cams in a hollow hub, in which the bucket-arms are fitted in boxes so as to revolve a quarter of a revolution forward and backward to present the buckets sidewise or edgewise, the essential feature of the invention being the contrivance of the hub.

Figure 1 is a sectional elevation of the wheel on the line *x x* of Fig. 2. Fig. 2 is a horizontal section. Fig. 3 is a perspective view of one of the paddles. Fig. 4 is a side elevation of one of the parts of the hub, and Fig. 5 is a section through one of the paddle-arms and its box.

A and B represent two parts of a hub joined together in the plane of the wheel, and fitted to turn on a stationary shaft, C, in the center of which hub is a grooved stationary hub, D, containing cams E and F for turning the paddle-arms forward and backward by acting on the heads H and I of the inner end of the paddle-arms. The part A of the hub has recesses in one side to receive journal bearings or boxes K of brass or suitable metal for the arms to turn in, said boxes being made in two parts and rabbeted at the meeting-faces so as to be suitably confined against lateral play, and the part B of the hub has the radial sections L to fit in the recesses of part A and secure the boxes in their places, except the section L. The part A of the hub comprises all of the hub outside of the circle M.

The cam E turns the paddles sidewise to the water by acting on the heads H, and the cam F turns them edgewise by acting on the heads I.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the hollow hub A B, containing stationary hub D, having cams E and F, of the paddle-arms G, having heads H and I, substantially as specified.

2. The part A of the hub having recesses in the side for the boxes K, and the part B having radial sections L, combined and arranged substantially as specified.

FRANCIS JOSEPH LEISEN.

Witnesses:

WARREN DRUMMOND,

LEWIS D. KELLY.