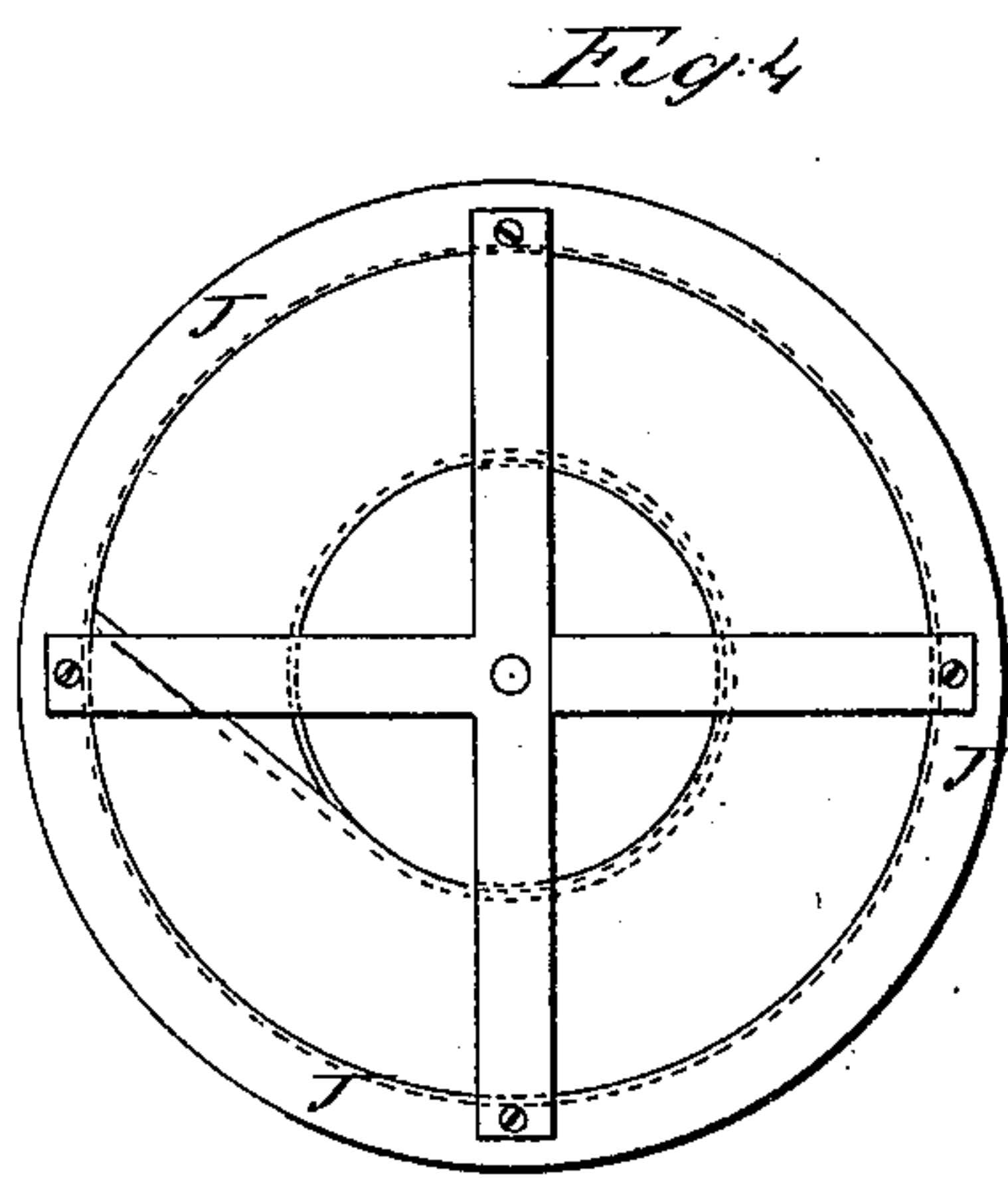
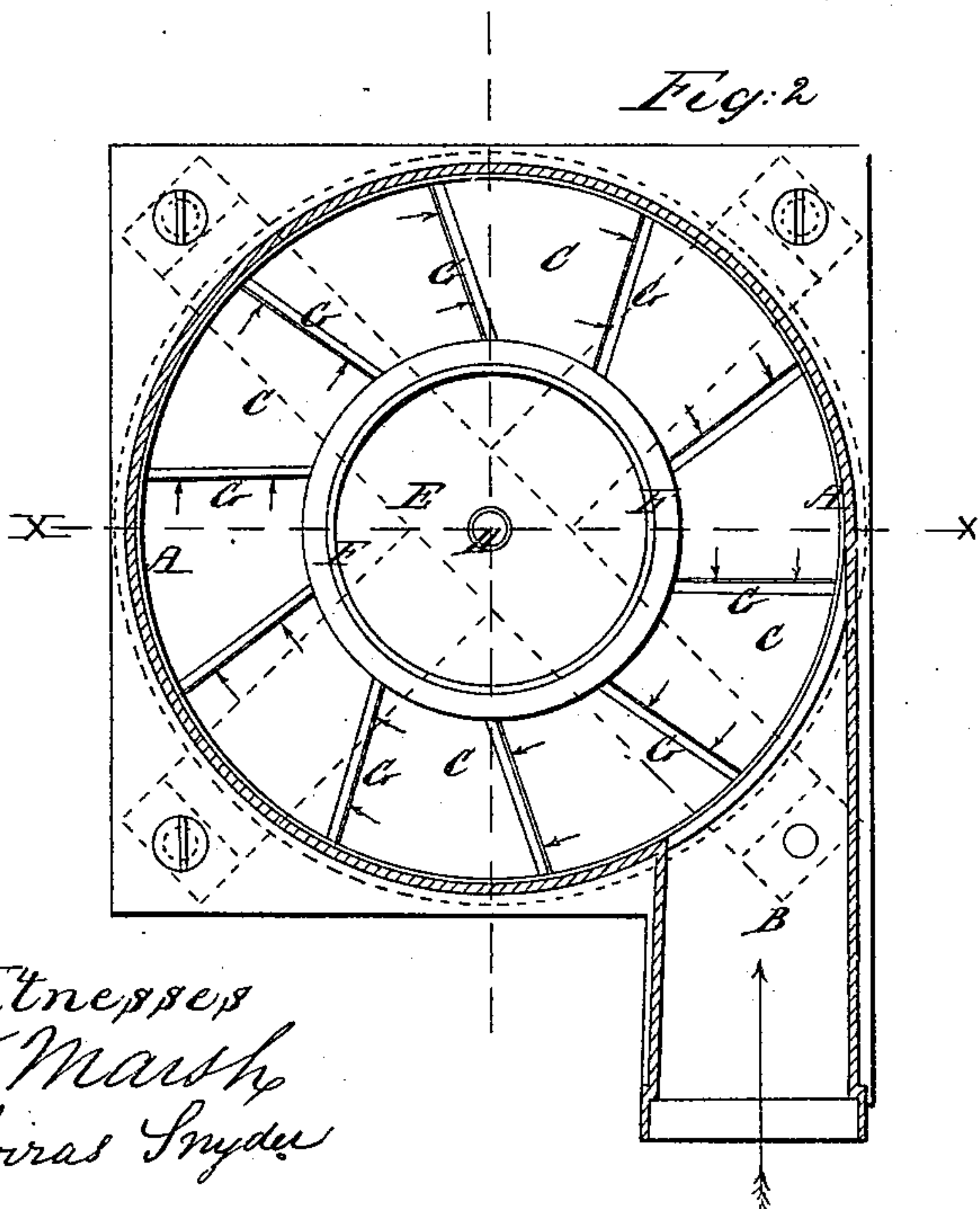
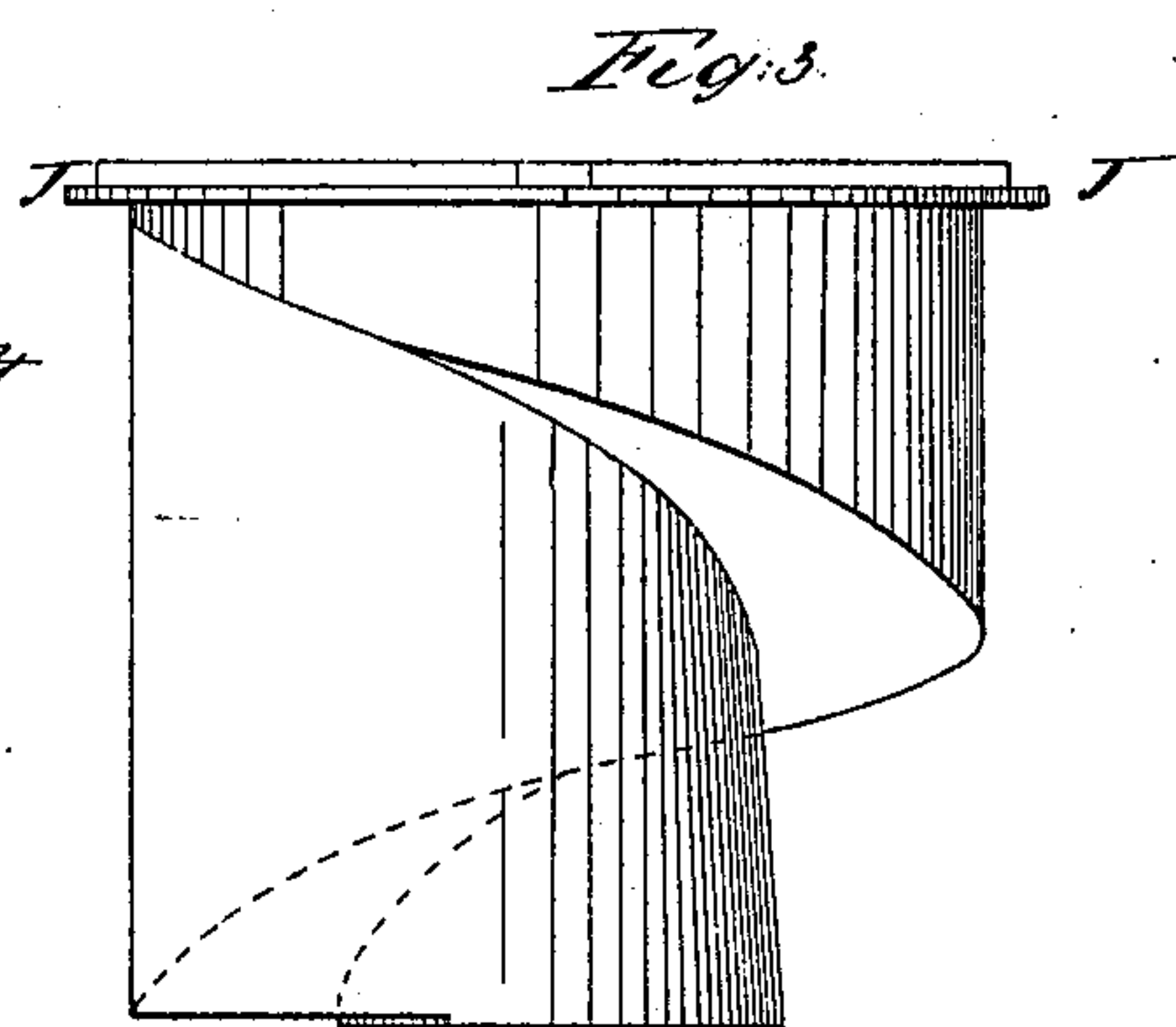
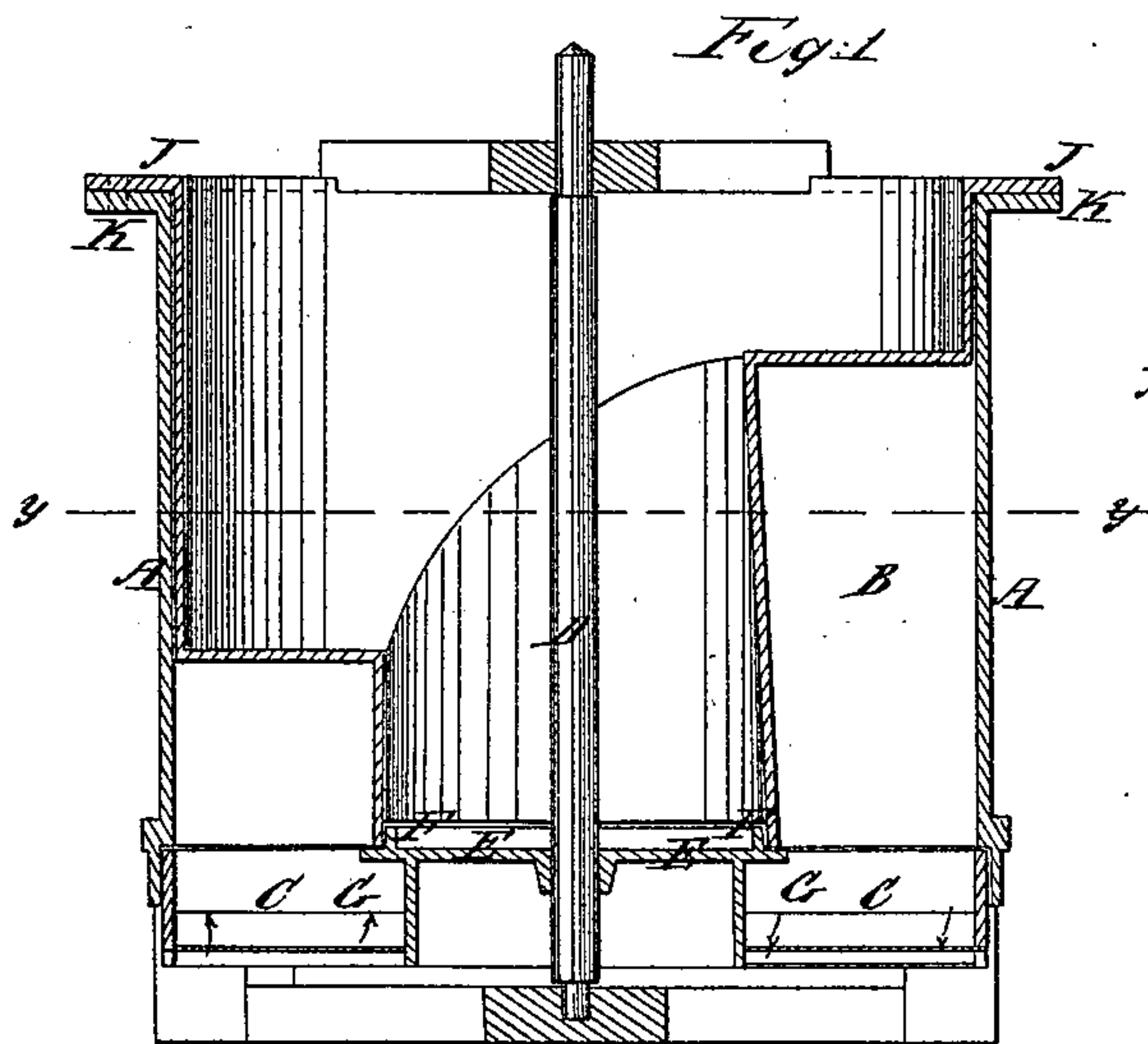


I. Mallory,

Water Wheel.

N^o 25,270.

Patented Aug. 30, 1859.



Witnesses
W. Marsh
Abner Snyder

Inventor
Isaac Mallory

UNITED STATES PATENT OFFICE.

ISAAC MALLERY, OF ETNA, NEW YORK.

IMPROVED CHUTE FOR HORIZONTAL WATER-WHEELS.

Specification forming part of Letters Patent No. **25,270**, dated August 30, 1859.

To all whom it may concern:

Be it known that I, ISAAC MALLERY, of Etna, in the county of Tompkins and State of New York, have invented a new and useful Improvement in Horizontal Water-Wheels; 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, in which—

Figure 1 represents a vertical cross-section taken through the red line *xx* of Fig. 2, which is a horizontal sectional plan taken through the red line *yy* of Fig. 1, with the scroll removed. Fig. 3 is a side elevation of the scroll. Fig. 4 is a top view of the same.

My invention consists of an adjustable chute or scroll so constructed and arranged within the penstock that by altering the position of this scroll to the inlet of water from the flume the volume of water may be regulated for any head or for any quantity of water by the contraction or expansion of said inlet, the spiral form of the chute offering more or less surface opposite said inlet, described and represented as follows:

A represents a cylindrical casing or penstock, and B the tapering inlet for conducting the water upon the buckets. C are the buckets, and D the shaft or spindle of the wheel attached to the hub of the wheel, which is a disk E, with an annular flange F cast on its surface.

Figs. 3 and 4 is the shell, made in the form of a scroll, which, when placed within the penstock A, forms a spiral passage passing entirely around the wheel, gradually tapering from the inlet B, so that the water gradually decreases in volume on its conducting-passage around the wheel, acting upon the broad backs G of the buckets and discharged by their inclined fronts between the casing and the hub of the wheel. This shell, Fig. 3, has a flange J cast on its top, which rests, when the shell is in the penstock, upon a similar

flange K. The bottom of this shell passes down over the disk E and over the flange F. The shell is separate from the case, and admits of being turned to any part of it and there secured by suitable fastenings whenever the best position for it may be ascertained. This adjusting or turning of the shell either increases or diminishes the orifice through which the water enters the scroll, and consequently the volume of water at the same time increases or lessens the number of buckets to be acted upon by the water. It will be seen by reference to Fig. 1 of the drawings that the buckets of the wheel project under the disk E, and nearer the center of the wheel than the inner wall of the scroll. This admits of a free passage of the water, and obviates the difficulty of operating in back-water.

The scroll or shell may be adjusted by a pinion acting on teeth made on the periphery of it, or by an endless screw, or by any convenient contrivance adapted to the purpose.

The whole or any part of this water-wheel and chute may be made of wood or iron, or both.

I am aware that scrolls have been employed in water-wheels of the same shape as mine, also that the buckets on the wheel, such as shown by me, have been long used, neither of which do I hereby claim irrespective of a special arrangement; but

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

Constructing and arranging the scroll within the penstock so that it can be turned so as to partially close the orifice for the admission of water upon the buckets, and to thereby regulate the flow of water for any head or for any quantity of water, essentially as above specified.

ISAAC MALLERY.

Witnesses:

ALVIRAS SNYDER,
W. MAISH.