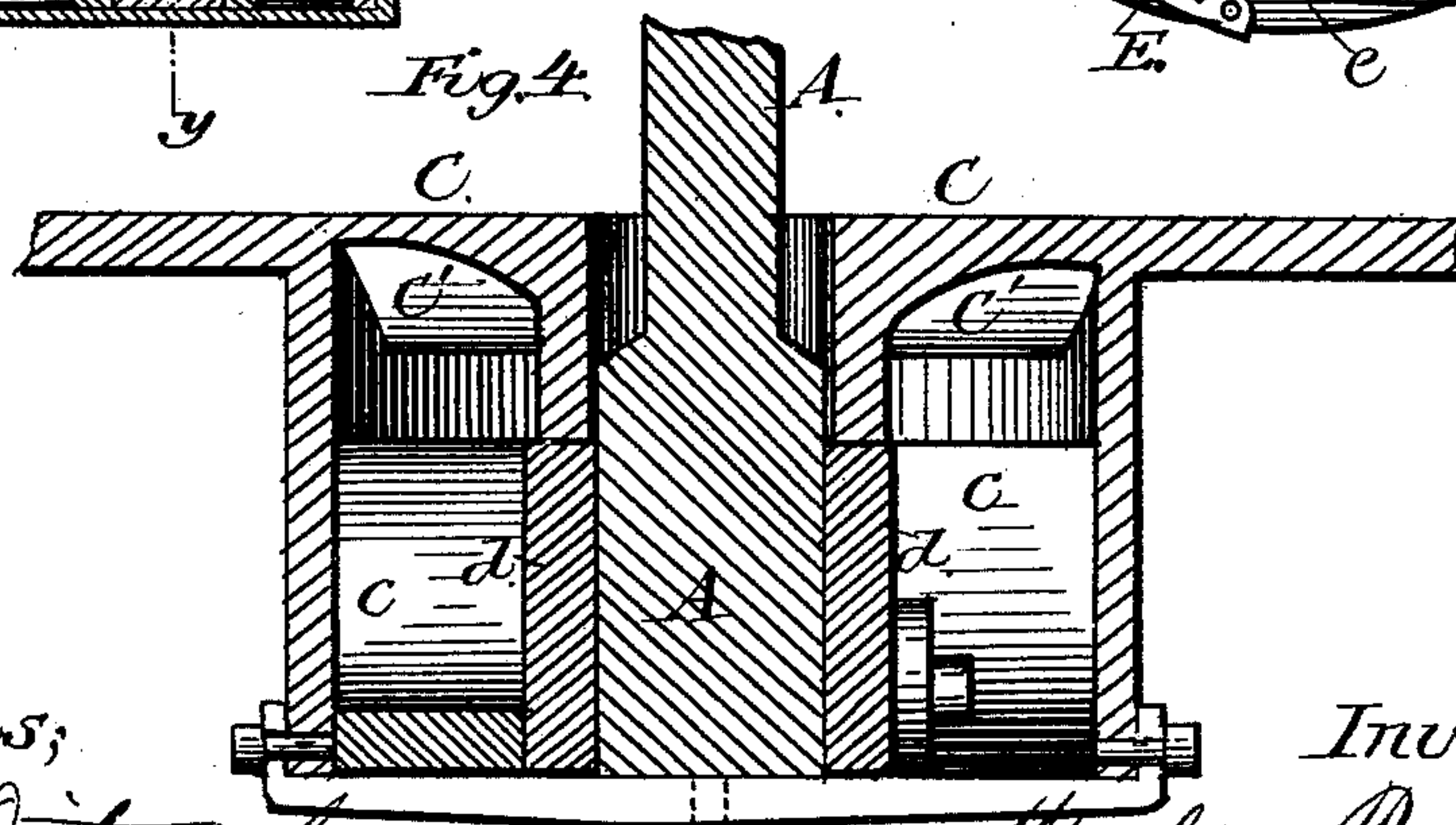
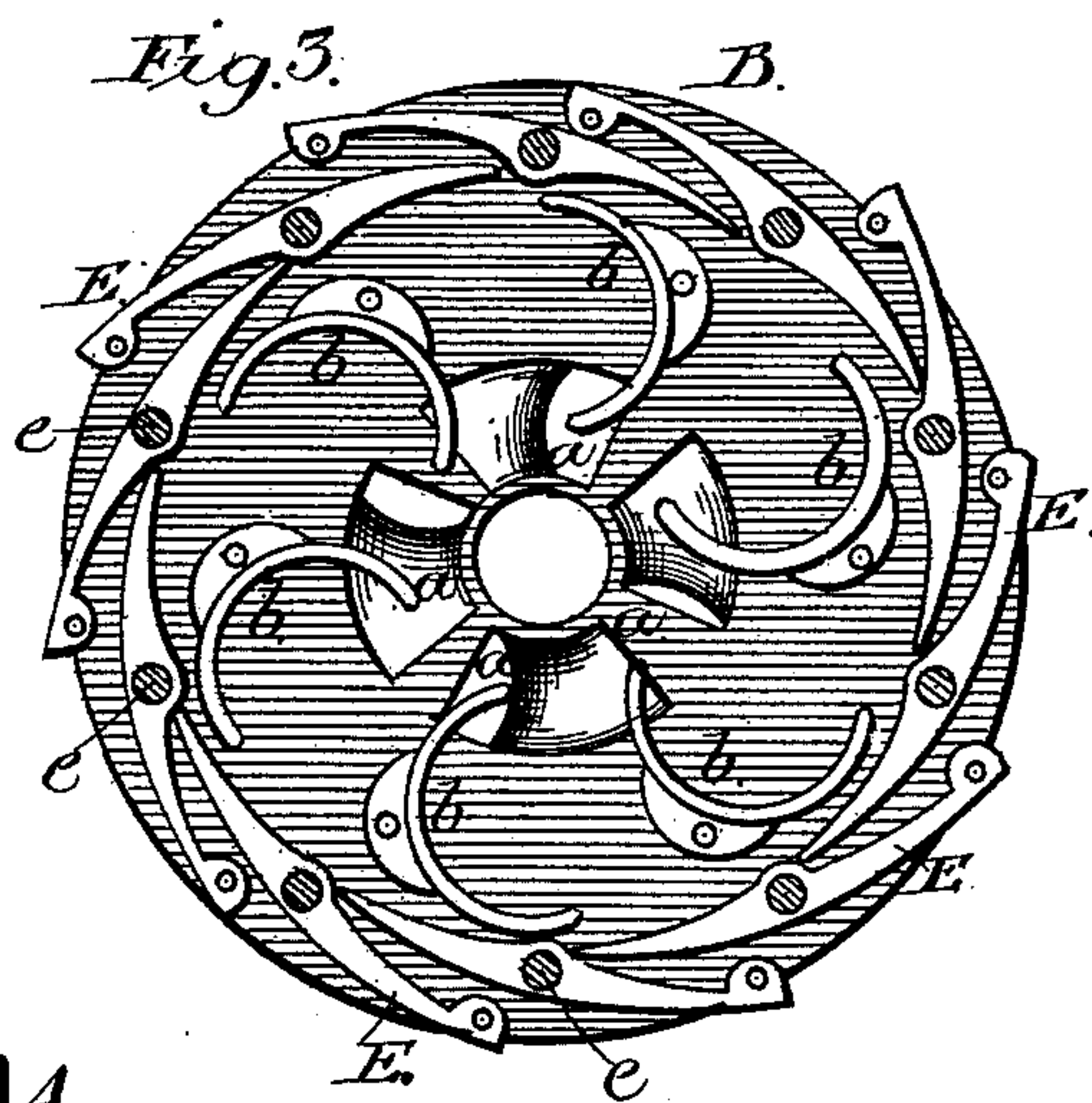
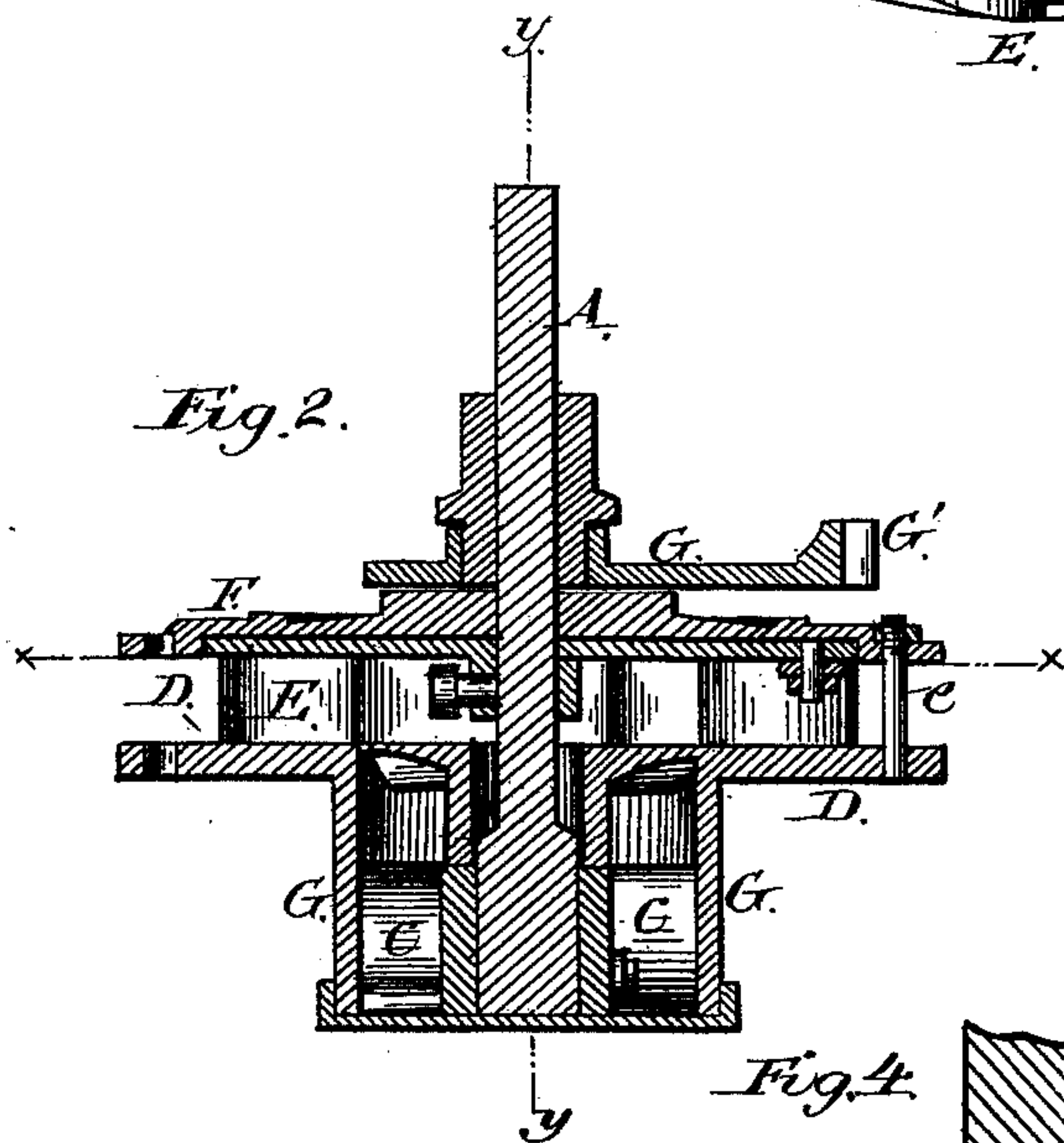
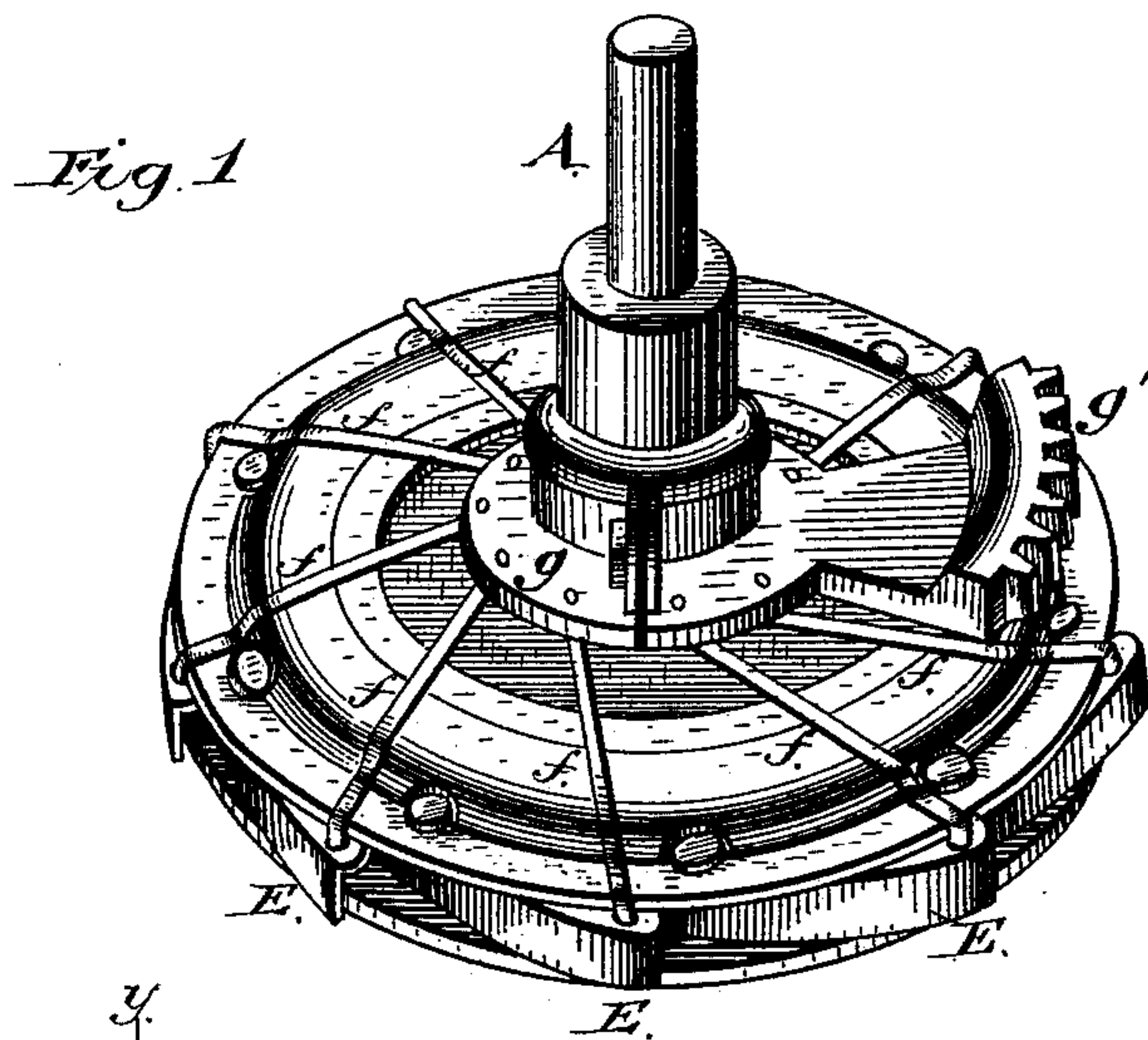


W. B. ALLRED.
Water-Wheel.

No. 222,566.

Patented Dec. 16, 1879.



Witnesses;
Hed. G. Dietrich
J. Walter Fowler.

Inventor;
Walter B. Allred
by Louis Braggery
attorneys.

UNITED STATES PATENT OFFICE.

WALTER B. ALLRED, OF HIGH POINT, NORTH CAROLINA, ASSIGNOR OF
ONE-HALF OF HIS RIGHT TO HERMAN L. KOELLSCH.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **222,566**, dated December 16, 1879; application filed
April 7, 1879.

To all whom it may concern:

Be it known that I, WALTER B. ALLRED, of High Point, in the county of Guilford and State of North Carolina, have invented certain new and useful Improvements in Water-Wheels; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view. Fig 2 is a vertical axial section. Fig. 3 is a horizontal section taken on the line *xx* in Fig. 2; and Fig. 4 is a similar section taken on line *yy* in Fig. 2.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to that class of water-wheels generally known as "turbines;" and it consists in the detailed construction and combination of parts, having for its object to produce a wheel which, with a given amount of water, shall be capable of developing the greatest possible amount of power, substantially as hereinafter more fully described.

In the drawings, A is a vertical shaft or axle, keyed or otherwise firmly secured upon which is a circular disk, B, upon the under side of which the buckets *b* are affixed. These consist of narrow vertical plates curved into the shape of a semicircle or crescent, the inner ends of which stop short of the central shaft, so that there is an open space (denoted by *a*) surrounding this on all sides.

Upon the lower end of shaft A is secured another set or series of buckets, *c*, which are arranged upon a sleeve, *d*, in such a manner that their upper straight or vertical ends impinge upon the chutes C', formed in the horizontal division C, which separates the upper chamber, formed by the casing D, gates E, and covering-plate F, from the lower chamber, G, which consists of a cylindrical extension of the case-plate D.

The gates E consist each of a curved plate or casting, pivoted at its middle upon a vertical bolt, *e*, which further serves to secure the covering-plate F upon the lower casing, D. The gates are manipulated by means of rods *f*, which engage with a plate, *g*, pivoted upon the shaft A, and operated by a toothed segment, *g'*, in a manner well understood.

As the water enters the space between the top plate, F, and case-plate D it will cause the wheel to revolve, and then be guided by the curvature of the said buckets down into the inclined chutes C', and through these into the buckets *c*, which are so set or arranged upon sleeve *d* and shaft A, with reference to the upper buckets, *b*, as to be turned in the same direction by the weight or force of the body of water emptying out through them. In this manner the same amount of water is utilized twice in its passage through the wheel—viz., first, in operating the upper buckets, *b*, and, second, in its descent through the cylindrical outlet or extension in the bottom of the case-plate D.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

The improved turbine herein described, consisting, essentially, of the top plate, F, gates E, and case-plate D, provided with the cylindrical extension G, and diaphragm C, provided with the chutes C', in combination with the shaft A and buckets *b c*, constructed as described, and arranged upon opposite sides of the diaphragm C, the whole constructed and combined to operate substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WALTER B. ALLRED.

Witnesses:

JAMES N. CAUDLE,
H. L. KOELLSCH.