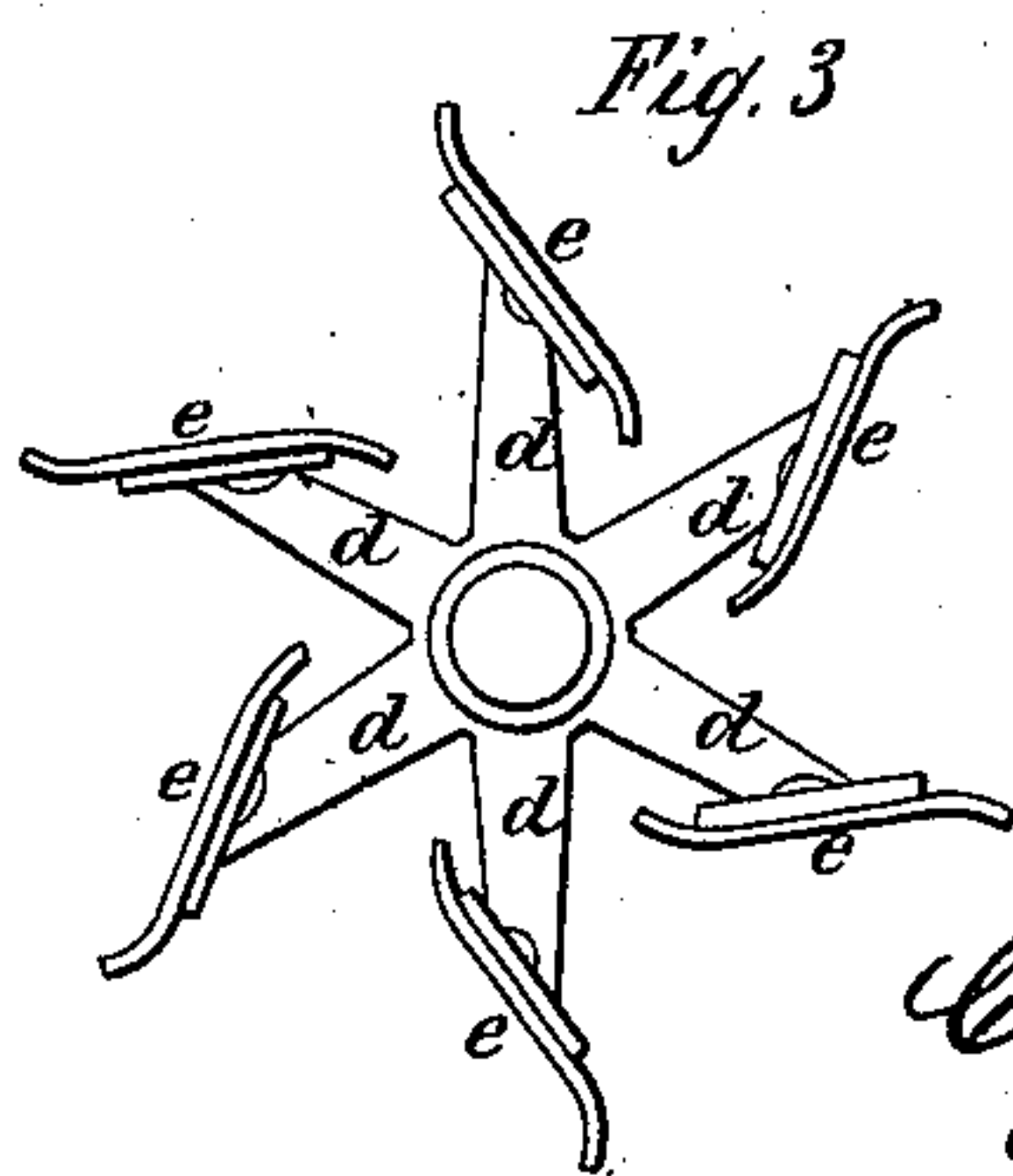
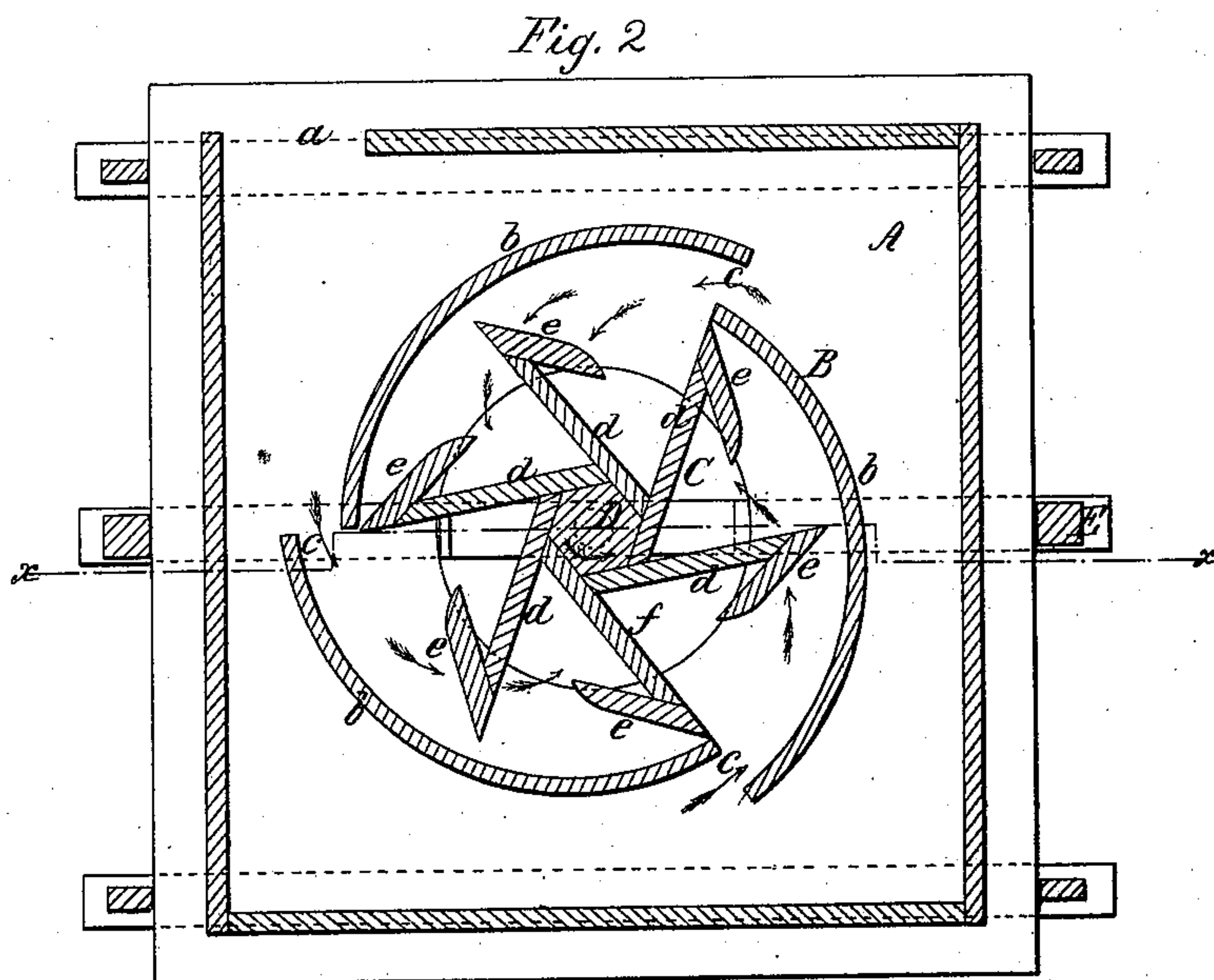
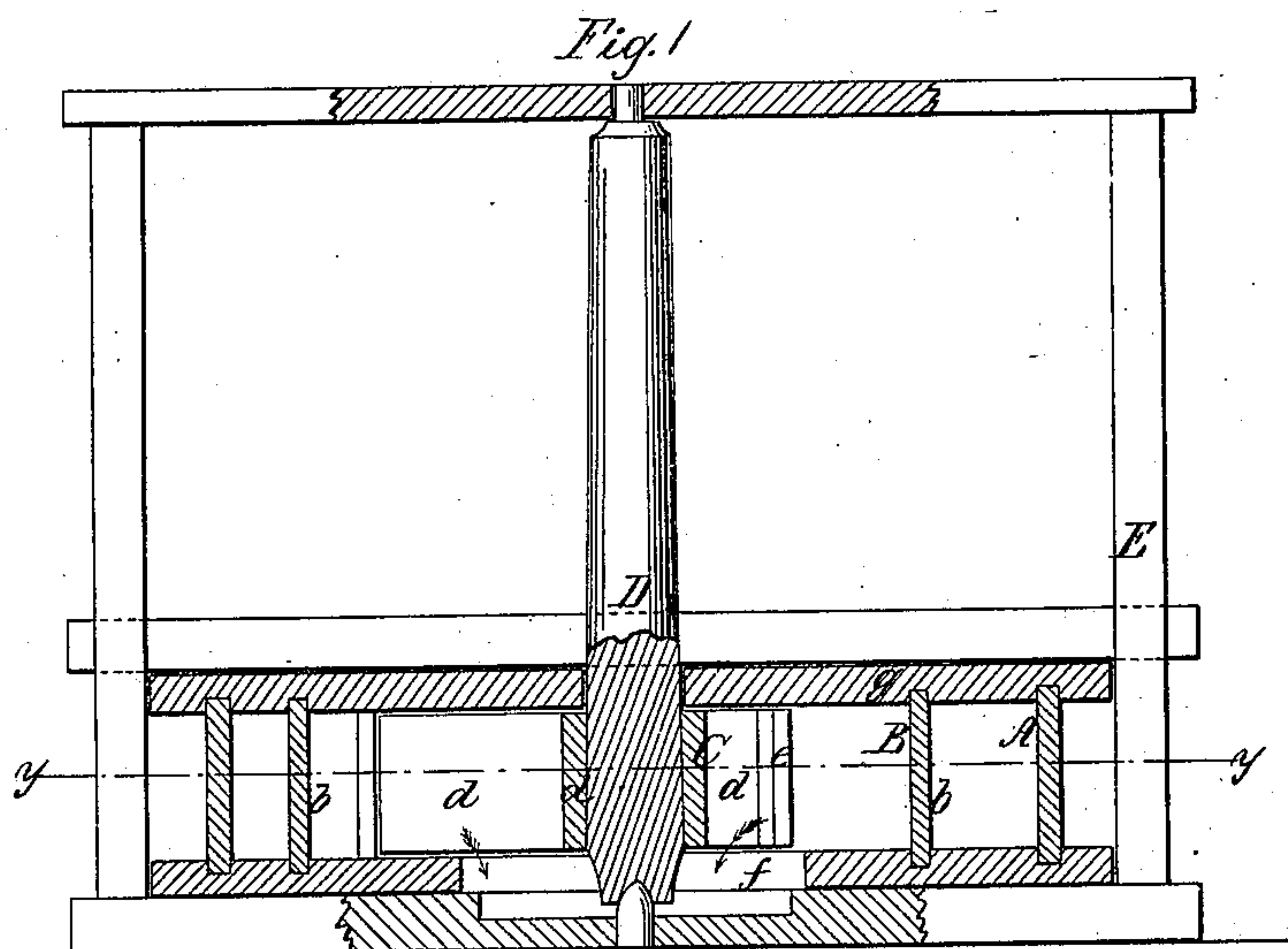


C. D. SPEARS.
WATER WHEEL.



Witnesses
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UNITED STATES PATENT OFFICE.

CHAS. D. SPEARS, OF LISBON, MAINE, ASSIGNOR TO HIMSELF, AND F. BUCKMAN, OF BOWDOINHAM, MAINE.

WATER-WHEEL.

Specification of Letters Patent No. 36,323, dated August 26, 1862.

To all whom it may concern:

Be it known that I, CHARLES D. SPEARS, of Lisbon, in the county of Androscoggin and State of Maine, have invented a new and Improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a side sectional view of my invention taken in the line *x, x*, Fig. 2; Fig. 2, a horizontal section of the same taken on the line *y, y*, Fig. 1; Fig. 3, a detached plan or top view of a metal wheel.

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

This invention relates to an improved water-wheel of that class which are placed on vertical shafts fitted within a scroll or case and commonly termed, horizontal wheels.

The invention consists in the employment or use of a scroll or case provided with a plurality of water induction passages and fitted within a penstock; in connection with a wheel provided with oblique buckets and a central discharge opening, all arranged as hereinafter described, whereby it is believed that the water is made to act in a very advantageous manner upon the wheel and a good percentage of the power thereof obtained.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a quadrilateral box or case which is connected with a flume or water-supply pipe as shown at *a*. This box A, forms a penstock and within it there is placed a scroll B formed of three segmental parts *b, b, b*, placed eccentrically with each other as shown clearly in Fig. 2, so as to leave induction openings *c*, between them at their ends. Within this scroll B, there is placed a wheel C, which is attached to an upright shaft D, the bearings of which are in a framing E, that encompasses the box A. See Fig. 1. This wheel is composed of arms *d*, which are attached tangentially to the shaft D, and have buckets *e*, secured to their

outer ends. The buckets *e*, are attached obliquely to the arms *d*, as shown clearly in Fig. 2, and the arms *d*, are of such a length that the ends of the buckets, as the wheel rotates, will just clear the ends of the segments *b* of the scroll B, which are nearest to the center of the wheel.

The bottom of the box A, underneath the wheel C, has a circular opening *f*, made in it to admit of the discharge of the water from the scroll B, after the former has acted upon the wheel. The box A, is provided with a cover or lid *g*.

The operation is as follows: The box A, which may be termed a penstock, is kept constantly full of water under pressure from the flume or supply pipe, the pressure being due to the height of the head. The water enters the scroll B, from the penstock A, through the openings *c*, acts upon the buckets *e*, and is discharged through the opening *f*. In consequence of the penstock A, being kept continually full of water the action of the latter on the wheel is attended without that loss from friction which in ordinary horizontal wheel is caused by the water passing directly into the scroll from the flume. In my invention the wheel receives the water directly from the penstock, and under pressure, and in consequence of the oblique position of the buckets and the supply of the water directly from the penstock, considerable advantage is obtained by the reactive force of the water in its passage or exit through the discharge opening *f*; a result not attained by a direct action of the water on the buckets under an impacting force direct from a flume.

When a metal wheel is used I prefer having the buckets of slightly curved form as shown clearly in Fig. 3. The straight buckets as shown in Fig. 1, are designed for a wooden wheel, which will answer an excellent purpose when economy is required.

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

1. The penstock A, and the scroll B, the latter being placed within the former and constructed of segments *b*, arranged eccentrically with the wheel C', as shown; in com-

ination with the wheel C, and central discharge opening *f*, all arranged as and for the purpose set forth.

2. The buckets *e*, attached to the arms *d*, of the wheel C, in an oblique position as shown and described, when said wheel thus constructed is used in combination with the

scroll B, penstock A, and central discharge opening *f*, as herein specified.

CHARLES D. SPEARS.

Witnesses:

ASA P. MOORE,
S. P. MOORE.