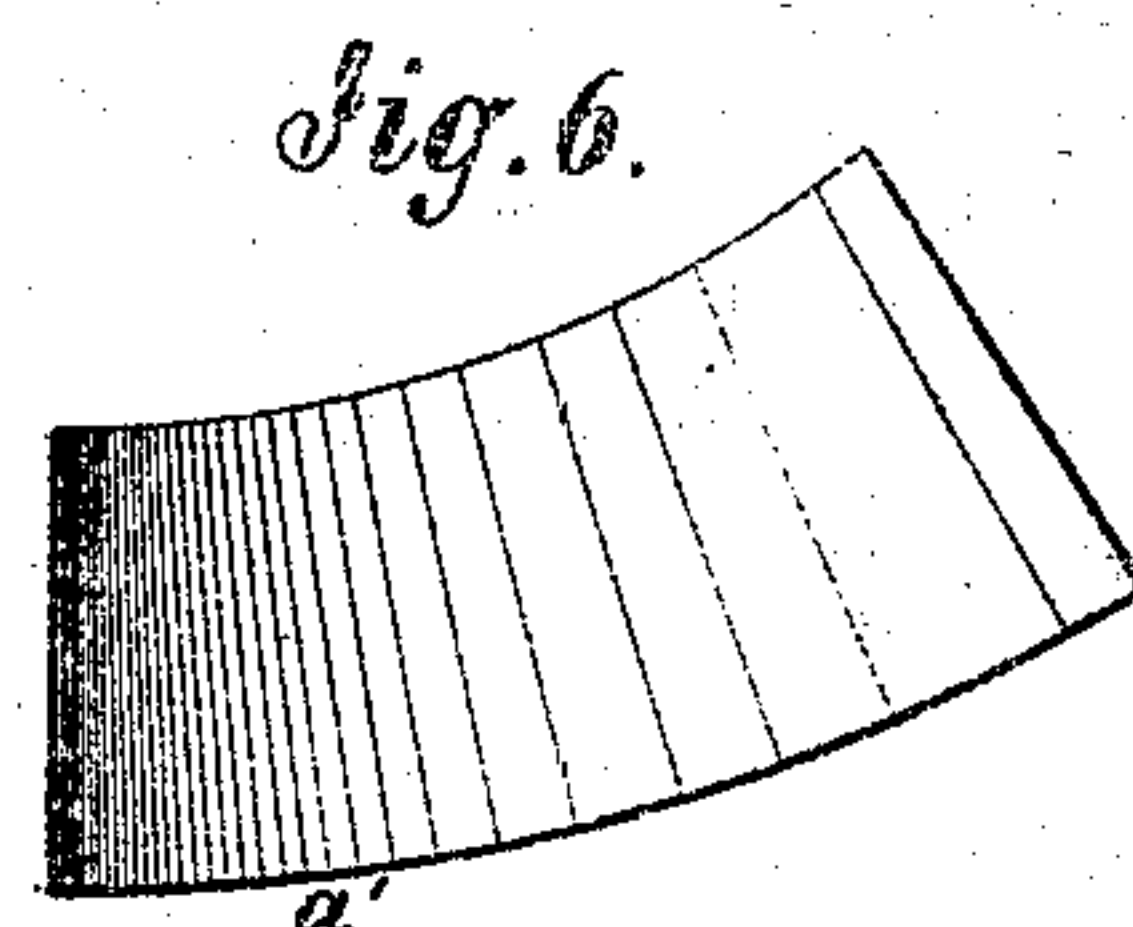
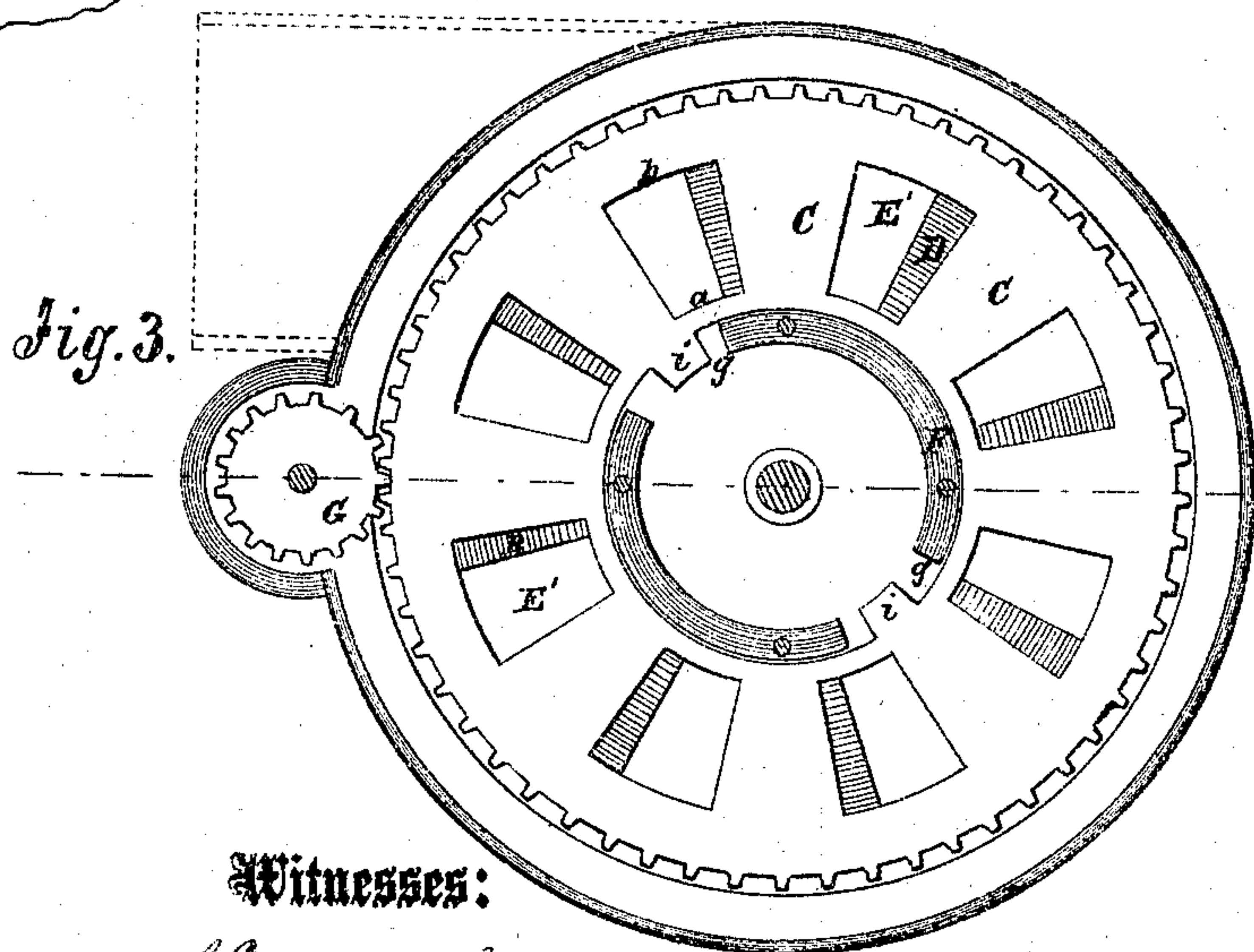
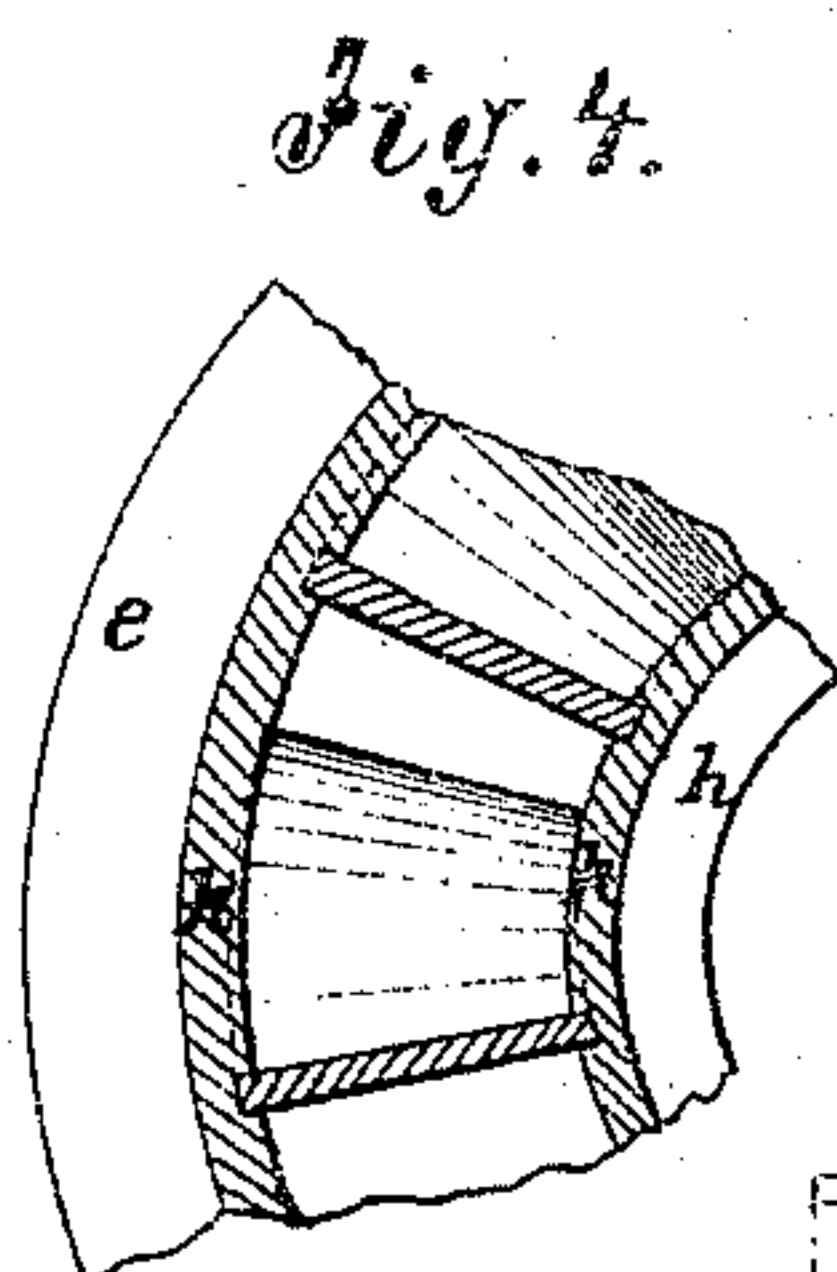
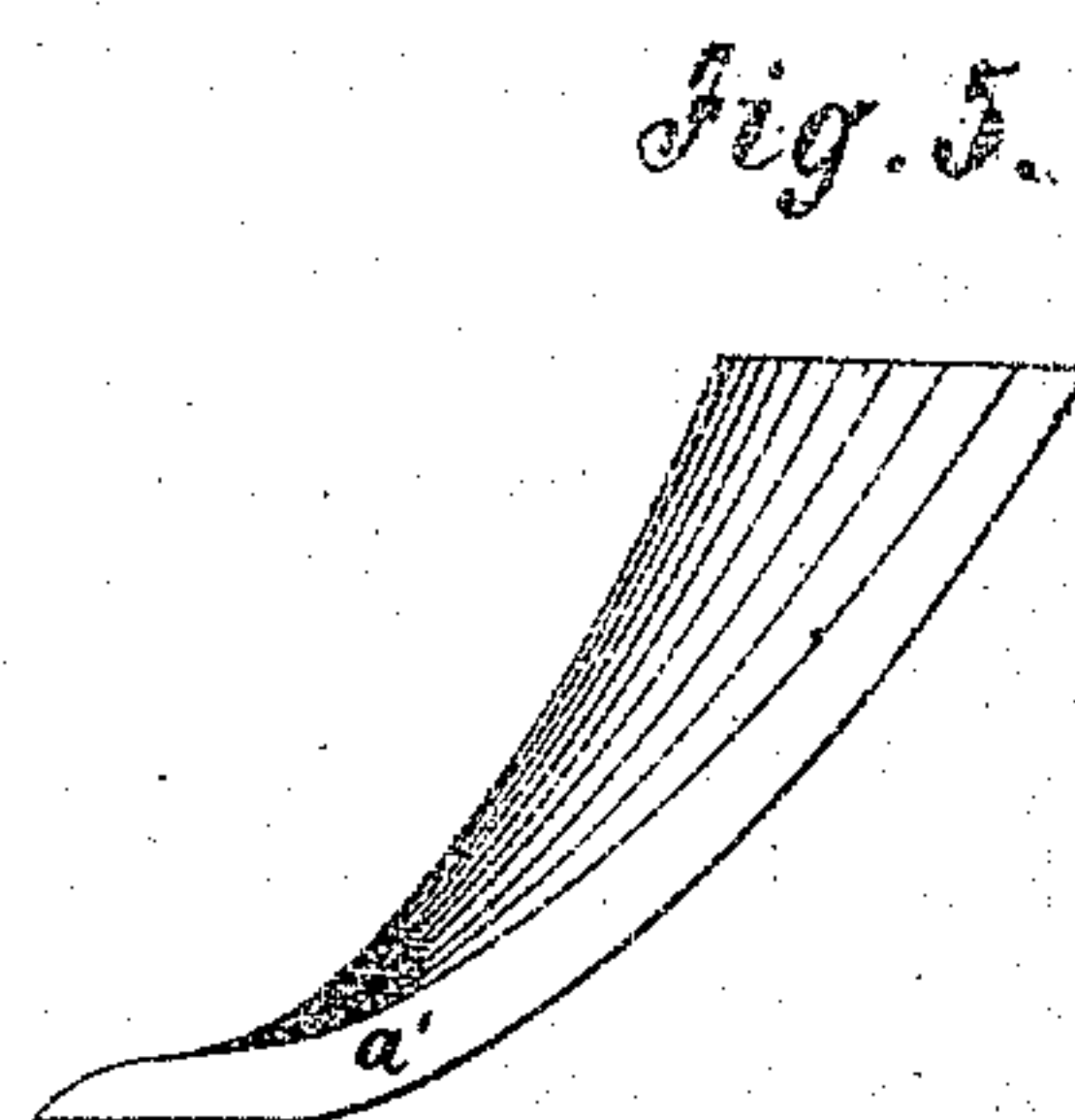
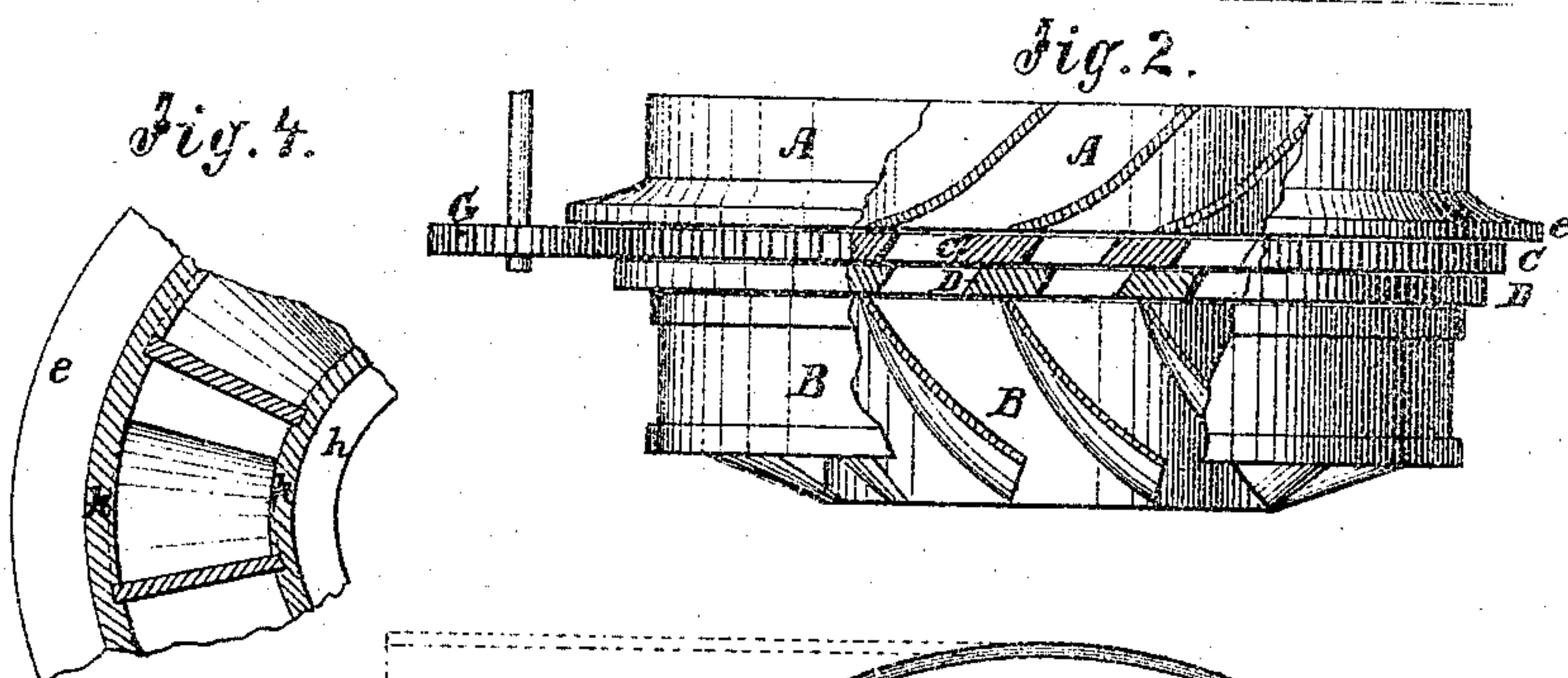
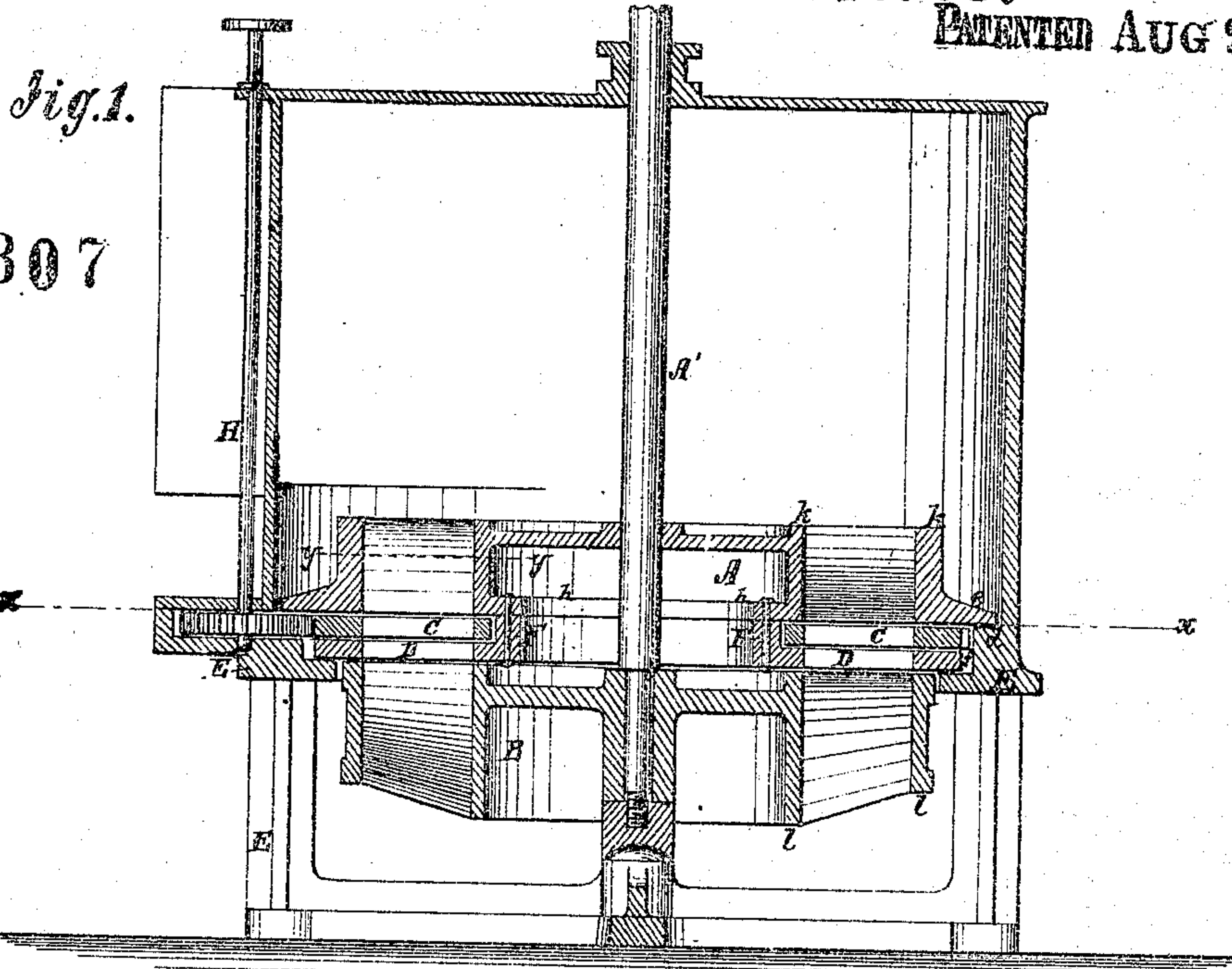


P.H. Wait. Water Wheel.

PATENTED AUG 22 1871

118307



Witnesses:

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UNITED STATES PATENT OFFICE.

PHILIP H. WAIT, OF SANDY HILL, NEW YORK.

IMPROVEMENT IN WATER-WHEELS AND GATES.

Specification forming part of Letters Patent No. 118,307, dated August 22, 1871.

To all whom it may concern:

Be it known that I, PHILIP H. WAIT, of Sandy Hill, in the county of Washington and State of New York, have invented a new and Improved Water-Wheel and Gate; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention consists in improving the construction of a water-wheel, as hereinafter fully described and subsequently pointed out in the claim.

Figure 1 is a sectional elevation of the guide, wheel, and curb. Fig. 2 is a side elevation of the guide and wheel with parts of the rim broken out. Fig. 3 is a horizontal section on line *xx* of Fig. 1. Fig. 4 is a section on line *yy* of Fig. 1. Figs. 5 and 6 are perspective views of a bucket.

Similar letters of reference indicate corresponding parts.

A is the guide. B is the wheel; C and D, the gate. This gate is formed of two annular plates or rings, having openings *E*¹, through which the water is admitted to the wheel. The inner and outer edges *a b* of these openings are circular curves, described from their centers. Their sides are radial lines. Their combined area measurement is nearly equal to one-half of the annular space which they occupy. E is a spider, having a rim, *E*², inclosing the wheel and gate, while the bottom supports the shaft *A'*. The outer edge of this spider is elevated to form a seat, *d*, for the flange *e* of guide A to rest upon, leaving an annular recess, *f*, to receive the outer edge of the ring D. The ring C is placed on the top of the ring D. They are fitted to each other to form a water-tight joint, working like a register, while the outer edge of the ring D rests on a seat in the spider E. Its inner edge has a flange, F, projecting upward to form an axis for the ring C to turn upon. The flange F is made a trifle higher than the thickness of the ring C, and is bolted firmly to the inner rim *h* of the guide to prevent being pressed down by the water. The ring C has its periphery toothed, into which the teeth of a small pinion, G, on the gate-stem H mesh, by which it is operated. The flange F has wide notches *g* cut into it to receive the lugs *i* on the inner edge of the ring C to regulate or stop its movement to open or close the issues in plate D.

Should an attempt be made to move the ring C further by pinion G these notches and projections would stop it; or should any obstruction in the gate prevent its closing, and an undue strain be applied to it by the pinion, the gate and guide would be carried around on their seats by the pinion G. The same would be the case should the obstruction reach down through the gate and be caught in the buckets of the wheel while in operation, except in this case the gate would be carried by the wheel.

The buckets and chutes are arranged on radial lines both at the upper and lower ends, also at all points between the ends; are a little wider at the upper ends and formed on a right line from the top to *a'*, where an abrupt turn occurs, from which to the point they are nearly horizontal, as indicated in Fig. 5, to gather the water compactly before discharging and make the best impact on the buckets as it escapes from the chutes, and in the case of the wheel it is done to obtain the reacting force. Both the guide-chutes and the buckets of the wheel are designed to be of this form, which, it is believed, will give better results in this class of wheels than other forms. The said buckets and chutes are formed on the straight lines indicated, in order to admit of molding the rims and buckets together, which is made possible by this plan, as it admits of drawing the pattern from the sand by turning it around on its vertical axis as it is raised from the mold in the directions in which they set relatively to the rims. The inclination of the bucket may be varied; but I prefer to have it in about the relation of the hypotenuse to the sides of a right-angled triangle whose base is five and perpendicular four.

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

1. In water-wheels, a gate formed of the annular plate C and flanged plate D F, both having apertures curved on their edges *a b* and radially lined on their sides, as and for the purpose specified.

2. The said gate *a b* C D F, spider E having rim *E*² and seat *d*, and guide having flange *e*, all combined in a water-wheel, as and for the purpose specified.

P. H. WAIT.

Witnesses:

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