E. G. Cushing,

Water Wheel.

No. 26,342. Patented Dec. 6, 1859.

Fig. 1.

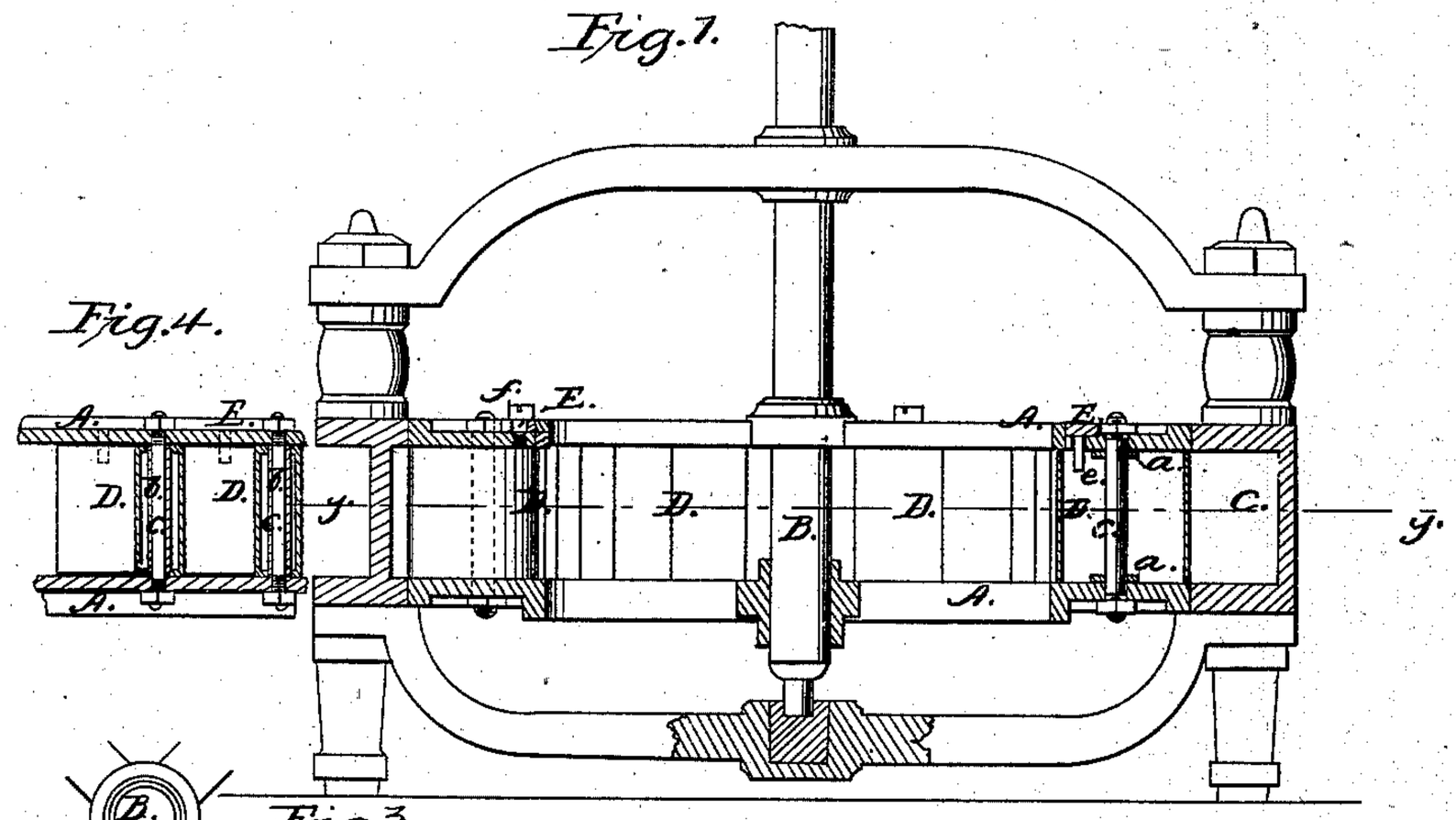


Fig. 4.

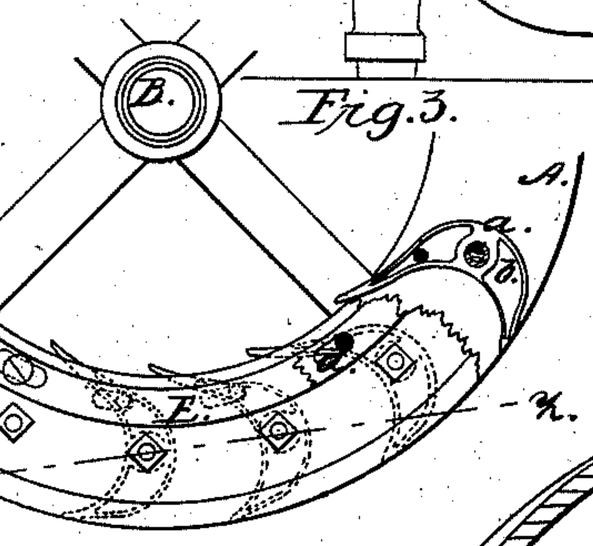
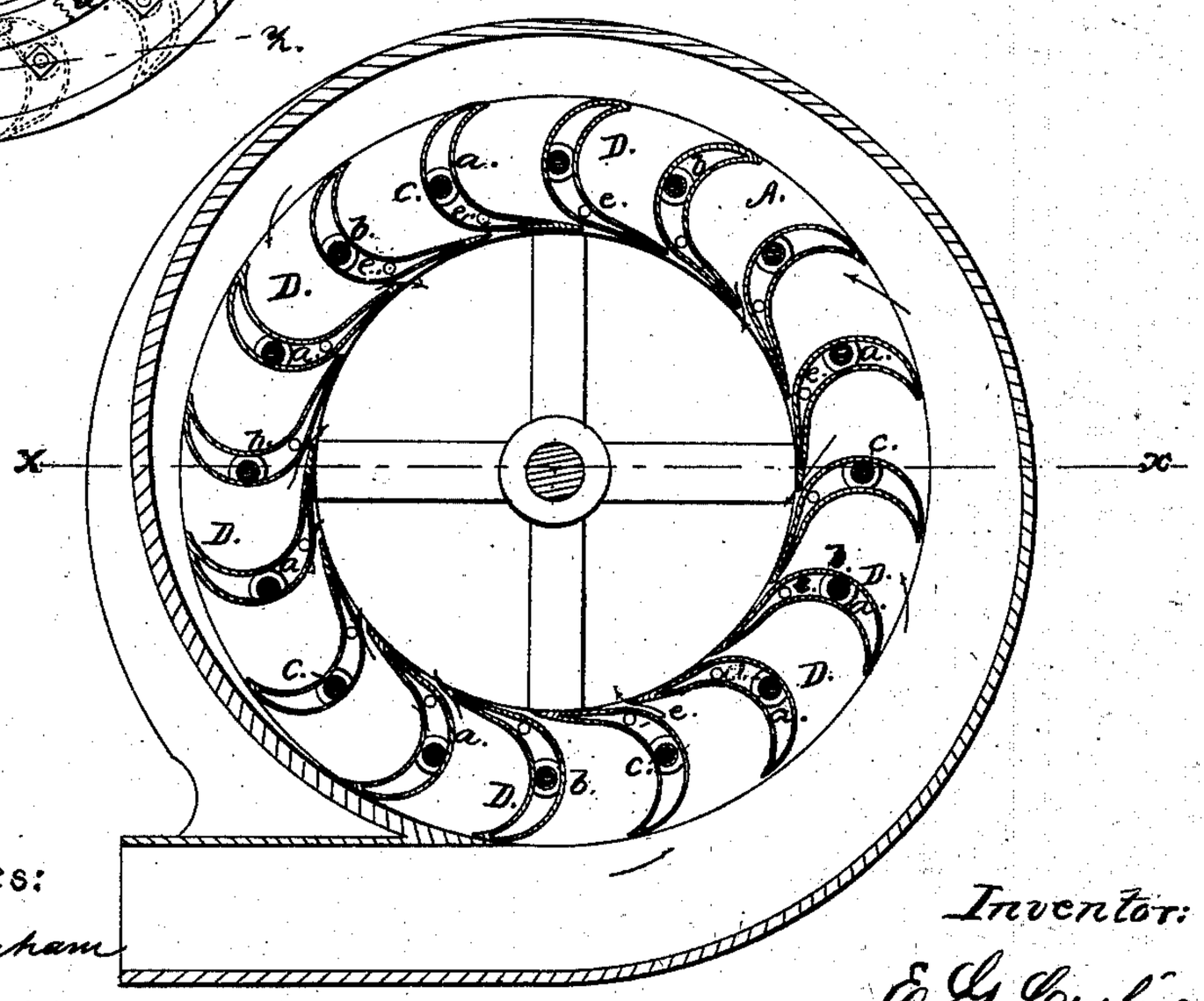


Fig. 3.

Fig. 2.



Witnesses:

A. E. S. Farnham

S. P. Ferguson.

Inventor:

E. G. Cushing.

UNITED STATES PATENT OFFICE.

E. G. CUSHING, OF DRYDEN, NEW YORK.

HORIZONTAL WATER-WHEEL.

Specification of Letters Patent No. 26,342, dated December 6, 1859.

To all whom it may concern:

Be it known that I, E. G. CUSHING, of Dryden, 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 of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical section of my invention taken in the line *x*, *x*, Fig. 2. Fig. 2, a horizontal section of the same taken in the line *y*, *y*, Fig. 1. Fig. 3, a plan or top view of a portion of the same. Fig. 4, a vertical section of a portion of the same, taken in the line *z*, *z*, Fig. 3.

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

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

A, A, represent two rims which are connected by arms to a vertical shaft B. These rims may be of the usual width and they are encompassed by a spiral scroll C, constructed arranged and applied to the rims in the usual or in any proper way.

Between the two rims A, A, the buckets D, are placed. These buckets are of metal, at least that would be the most preferable material and they are of curved form and made with double plates forming shells, as shown clearly in Fig. 2. Each bucket is provided with bearings *a*, *a*, one at the top and the other at the bottom. These bearings are simply traverse strips connecting the two plates and perforated to receive a tube *b*. These tubes *b*, are a trifle longer than the height of the buckets and form bearings for the two rims A, A, which are secured in proper position by bolts *c*, passing through the tubes *b*. The tubes *b*, it will be seen permit of a free turning of the buckets as the rims A, are not allowed to bear on them and said tubes also serve as pivots or fulcra on which the buckets are turned when adjusted.

Through the upper rims A, a series of oblong slots *d*, are made. These slots are curved and form portions of a circle concentric with their rim A, as shown in Fig. 3. On this upper rim A, a ring E, is placed, said ring having pins *e*, attached to its under side which passes through the slots *d*, and into or between the plates of the buckets, one pin passing into each bucket as shown clearly in Fig. 2. Through the ring E, screws *f*, pass said screws passing through concentric curved slots in the ring and into the upper rim A.

From the above description it will be seen that by shifting the ring E, the buckets D, may be adjusted so that the issues will be more or less open, see Fig. 2, in which the issues, or the spaces between the inner ends of the buckets are nearly closed and Fig. 3 in which the issues are much enlarged. By shifting the position of the ring E, the pins *e*, actuate the buckets, the ring and buckets being secured at the desired point by screwing up the screws *f*. This operation may be very readily performed and the dimensions of the issues made commensurate with the head of water and also with the power required from the wheel, so that the maximum power of the head may always be obtained whether greater or less and if the maximum power of the head is not required no more water will be used than is necessary.

In case a bucket requires to be removed the work is readily done by removing its bolt *c*, and tube *b*.

I do not claim broadly applying adjustable buckets to a wheel; but

I do claim as new and desire to secure by Letters Patent—

The combination of the tubes, (*b*) with the bolts (*c*) and buckets D, the whole being constructed and arranged as and for the purpose herein shown and described.

E. G. CUSHING.

Witnesses:

E. S. FARNHAM,

I. P. FERGUSON.