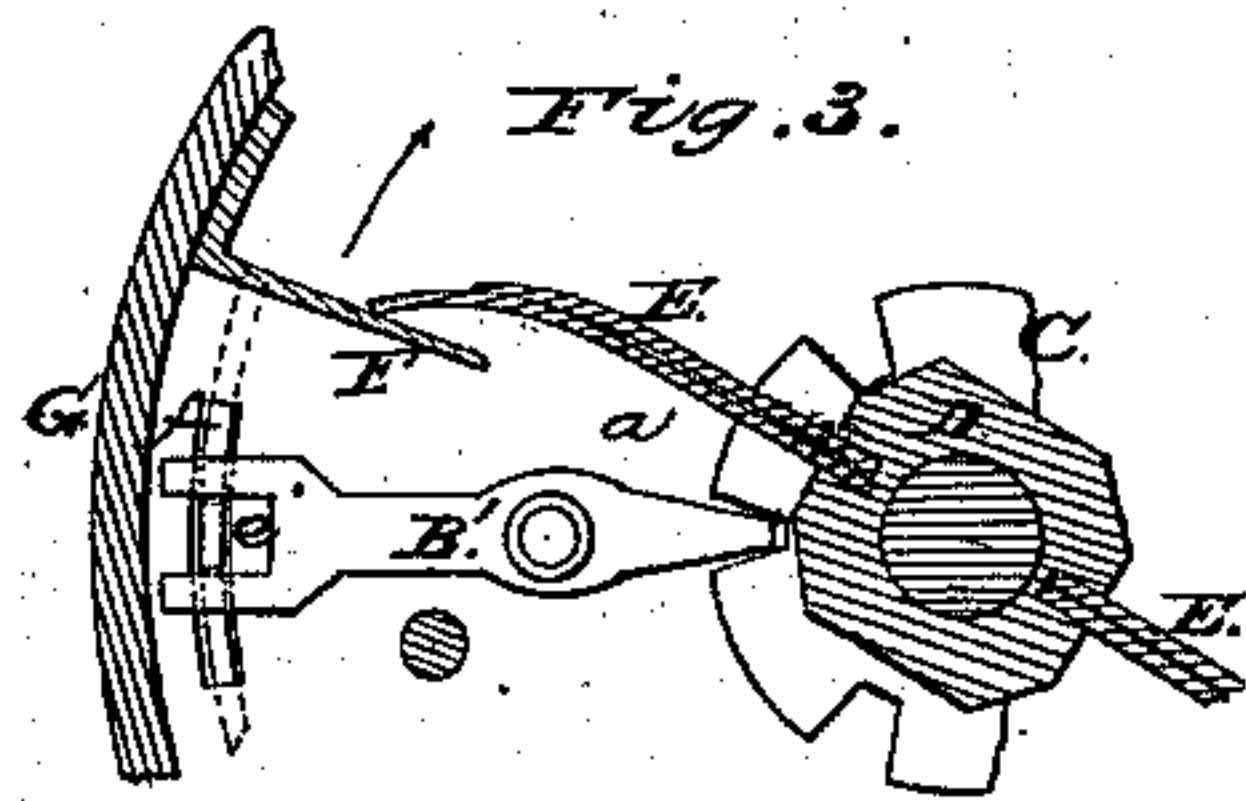
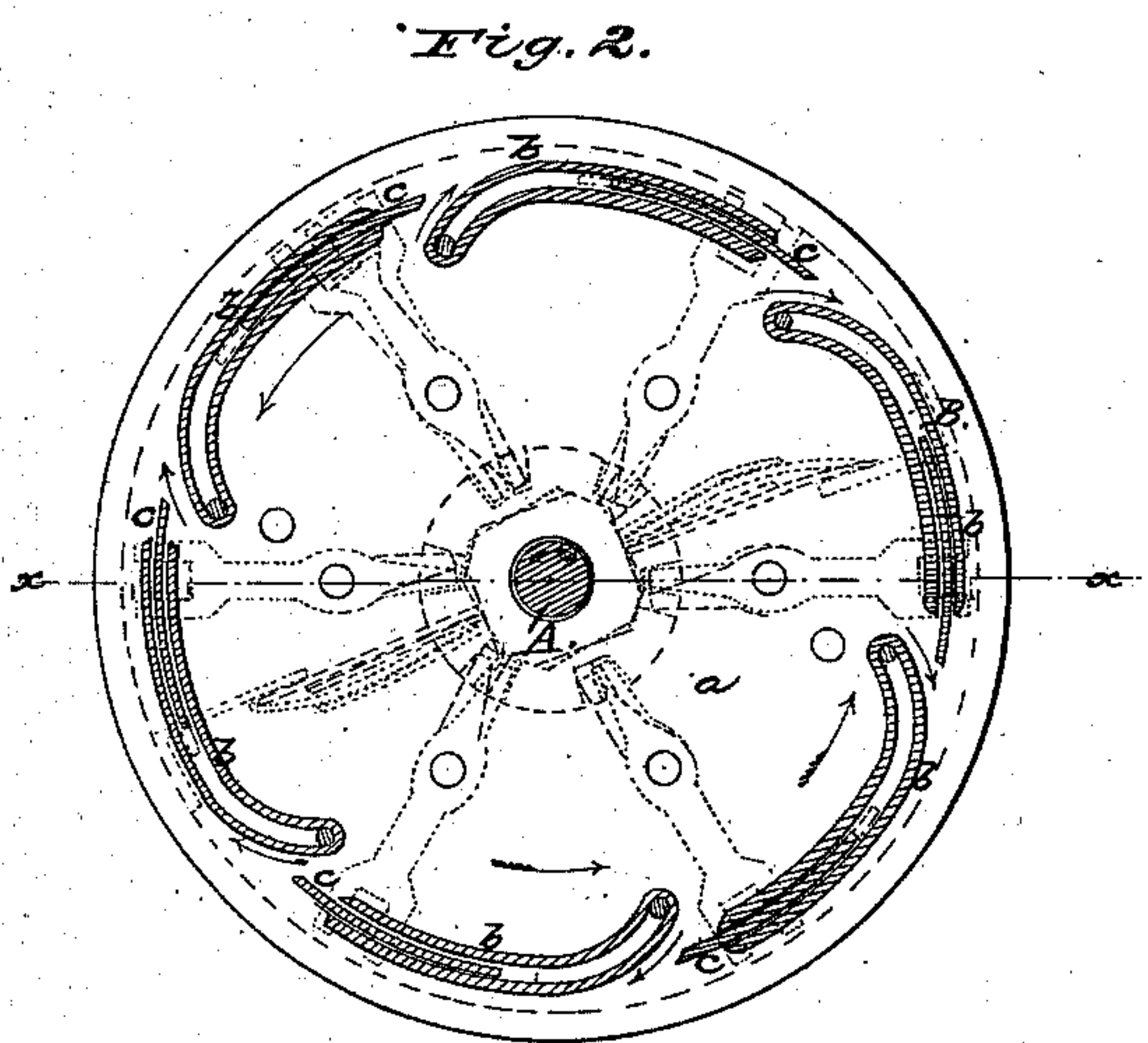
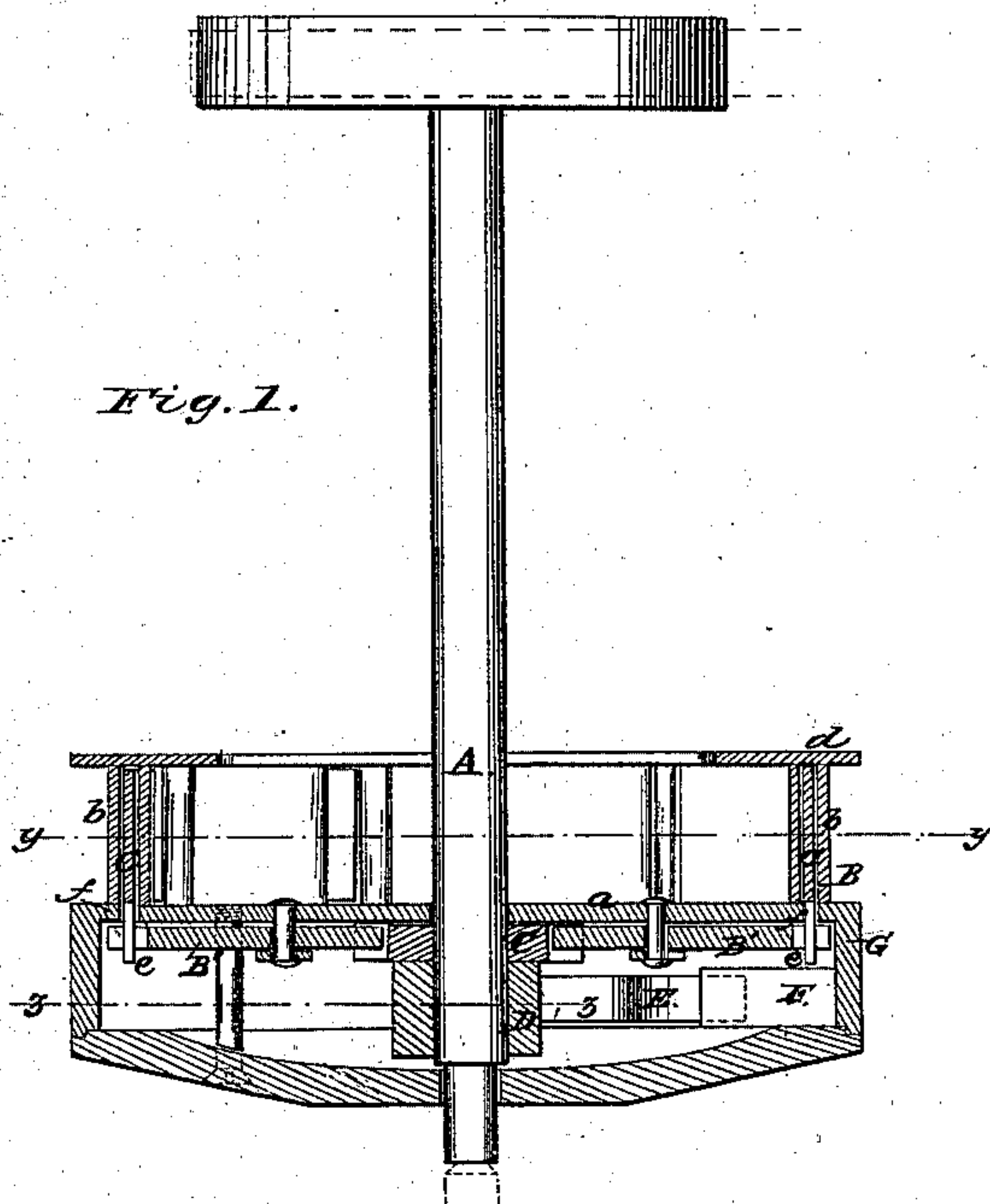


*P. Dickson,  
Water Wheel*

*Nº 35,366.*

*Patented May 27, 1862.*



*Witnesses:*  
*J. W. Coombs*  
*M. W. Livingston*

*Inventor.*  
*Perry Dickson*  
*per Munn & Co*  
*attorneys.*



# UNITED STATES PATENT OFFICE.

PERRY DICKSON, OF UTICA, MINNESOTA.

## IMPROVED WATER-WHEEL.

Specification forming part of Letters Patent No. 35,366, dated May 27, 1862.

*To all whom it may concern:*

Be it known that I, PERRY DICKSON, of Utica, in the county of Winona and State of Minnesota, have invented a new and useful Improvement in 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 accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my invention taken in the line *xx*, Fig. 2; Fig. 2, a horizontal section of the same taken in the line *yy*, Fig. 1; Fig. 3, a horizontal section of a portion of the same, looking upward, *zz*, Fig. 1, indicating the plane of section.

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

This invention relates to an improvement which is applicable to either center-vent or outward-discharge horizontal water-wheels; and it consists in providing the wheel with supplemental adjustable buckets arranged with permanent or stationary buckets and connected with the shaft in such a manner that they will be self-adjusting and made to open and close, so that the issues or discharge-orifices of the wheel will always be proportionate in area to the power required of the wheel, thereby avoiding a useless expenditure of water when the wheel is running and driving machinery requiring less than its maximum power.

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

A represents the shaft of a horizontal water-wheel, and B is the water-wheel, which is placed loosely on the shaft. The water-wheel is formed of a circular bottom plate, *a*, having buckets *b* attached permanently to its upper surface near its edge. These buckets are of curved form and are hollow, so as to form what may be termed "sheaves" to receive supplemental buckets *c*, which are allowed to slide freely into and out from the buckets *b*, as shown clearly in Fig. 2. The upper edges of the stationary buckets *b* are attached to a rim, *d*, which is concentric with the circular bottom plate, *a*. The adjustable buckets *c* are of course of curved form, and each is provided with a pendent lip, *e*, which projects through a curved slot, *f*, in the bottom plate,

*a*, a slot, *f*, being directly underneath each permanent or stationary bucket *b*. (See Figs. 1 and 3.)

To the under side of the bottom plate, *a*, of the wheel there are attached a series of levers, *B'*, the outer ends of which are forked to receive the pendent lips *e* of the buckets *c*. The inner ends of the levers *B'* are fitted in a plate or collar, *C*, which is permanently secured to the shaft *A* just below the bottom plate, *a*, of the wheel.

On the shaft *A*, and directly underneath the plate or collar *C*, there is placed a hub, *D*, in which springs *E E* are fitted, said springs projecting from opposite points of the hub and having their ends bearing against lips or projections *F F* at the inner side of a hollow cylinder, *G*, which is secured to the bottom of the wheel *B*. The springs *E E* and lips or projections *F F* form the only connection between the water-wheel and its shaft *A*.

The operation is as follows: The supplemental adjustable buckets *c* are, in the first place, set so that the issues of the wheel will admit of a discharge of water required when the wheel is working at its minimum power. This setting of the buckets *c* is effected by adjusting the hub *D* on the shaft *A* so that the issues will be of the desired area when the lips or projections *F* touch the ends of the springs *E*. The wheel *B*, as it rotates, turns the shaft *A* in consequence of the lips or projections *F* bearing against the springs *E*, and when the wheel is working at its minimum power the springs *E* will not yield or give. When, however, more power is required than the minimum and additional machinery attached to shaft *A*, the increased resistance offered to the rotation of the wheel will cause the springs *E E* to yield or give, and the adjustable buckets *c* will, by means of the levers *B'* and collar *C*, be forced back within the stationary buckets *b*, and the area of the issues consequently enlarged to admit of a greater flow or discharge of water from the wheel, and the power of the latter will be proportionally increased. Thus it will be seen that the buckets *c* are rendered self-adjustable without any special manipulation on the part of the attendant, the buckets adjusting themselves as the work or machinery to be driven is applied to the wheel.

This invention is applicable to either cen-



ter-vent or outward-discharge wheels or spiral vent-wheels.

I am aware that water-wheels have been provided with adjustable buckets to admit of their issues being contracted and enlarged according to the power required; but, so far as I am aware, none have been arranged so as to be self-adjusting. I therefore do not claim, broadly, a water-wheel provided with adjustable buckets; but

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

A water-wheel fitted loosely on its shaft A, and connected therewith by springs, and provided with adjustable buckets c, connected with the shaft by levers B' and collar C, or equivalent mechanism, all arranged to operate as and for the purpose herein set forth.

PERRY DICKSON.

Witnesses:

EBENEZER WARNER,  
HENRY HALL.