W. WALKER.

Water Wheel.

No. 23,874. Patented May 3, 1859.

Fig. 1.

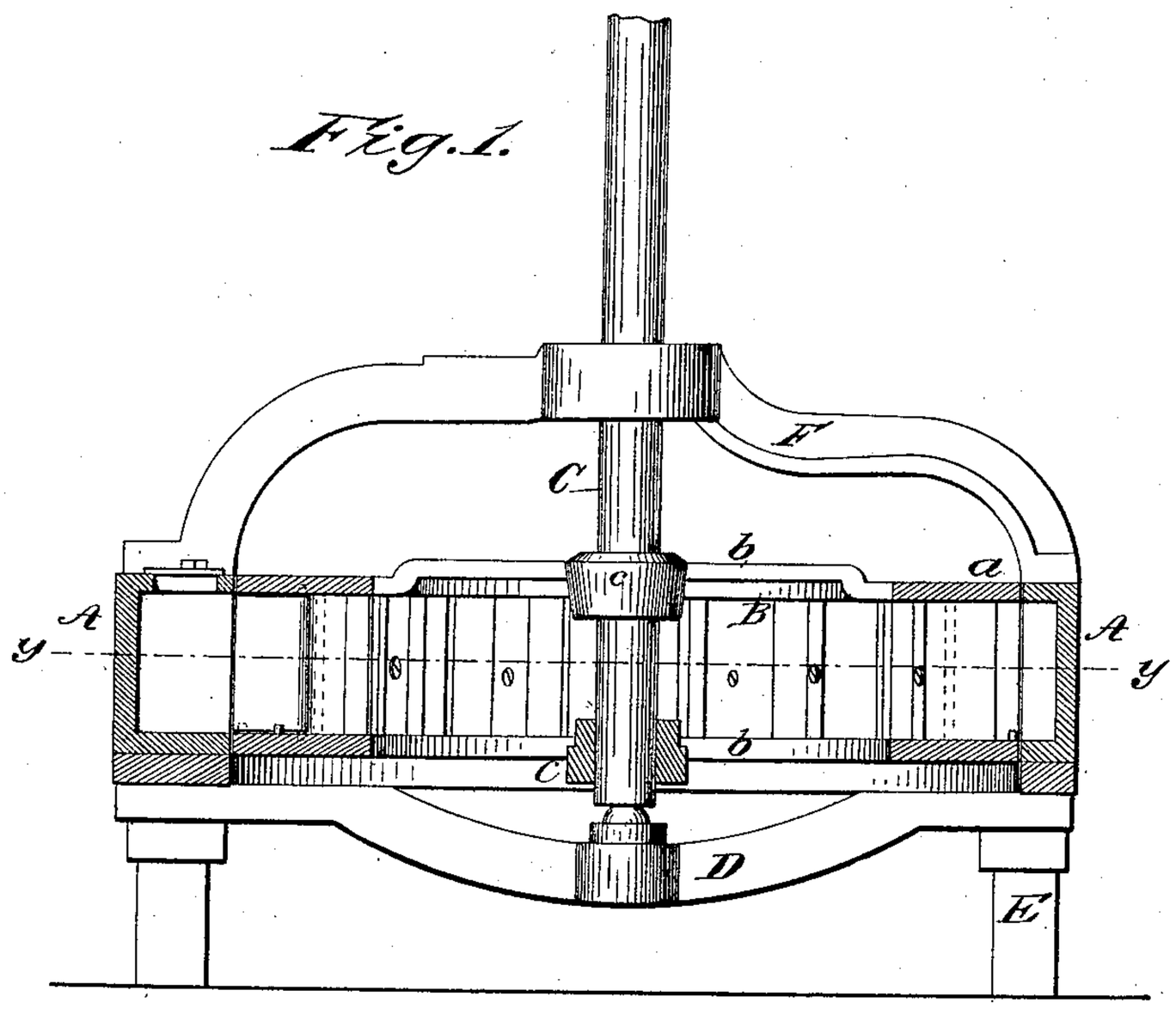
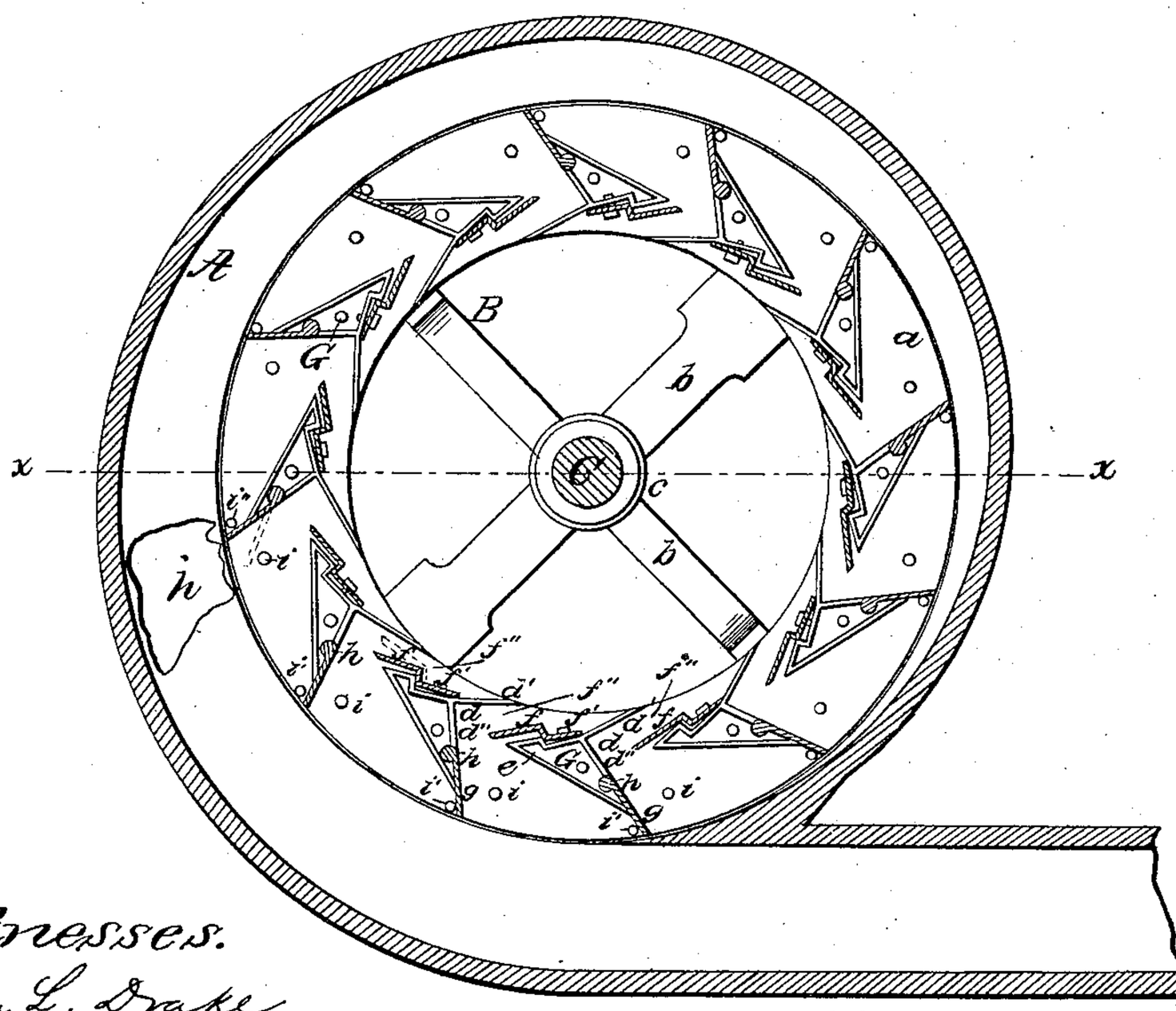


Fig. 2.



Witnesses.

Morgan L. Drake

Joseph R. Pourman

Inventor:

William Walker

UNITED STATES PATENT OFFICE.

WILLIAM WALKER, OF PONTIAC, MICHIGAN.

WATER-WHEEL.

Specification of Letters Patent No. 23,874, dated May 3, 1859.

To all whom it may concern:

Be it known that I, WILLIAM WALKER, of Pontiac, in the county of Oakland and State of Michigan, 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 annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical central section of my invention taken in the line *x*, *x*, Fig. 2. Fig. 2, a horizontal section of ditto, taken in the line *y*, *y*, Fig. 1.

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

This invention relates to an improvement in horizontal center-discharge water wheels and consists 1st. in having the front or outer parts of the buckets made movable or adjustable in such a way that in case of stones, sticks or foreign substances of any kind entering the scroll, the buckets will be allowed to yield or give and be prevented from being broken.

The invention consists 2nd, in the employment or use of a series of adjustable plates or stops applied to the wheel in such a manner that the issues or discharge orifices between the buckets may be enlarged or contracted as circumstance may require.

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

A, represents a scroll which gradually diminishes in width from its orifice to its inner end as shown clearly in Fig. 2. This scroll may be of cast metal and it is arranged similar to those generally employed.

B, is the wheel, the shaft C, of which is stepped at the center of a bridge tree D, that is secured to a framing E, on which the scroll rests, the upper part of the shaft C, passing through a bar F, which is attached to the upper surface of the scroll as shown clearly in Fig. 1. The wheel B, is formed of two annular plates *a*, *a*, placed one above the other and connected to the shaft C, by arms *b*, and hubs *c*. Between the plates *a a* the buckets G are secured. These buckets are each formed of a bent plate *d*, the inner parts *d'*, of which are about at right angles to the outer parts *d''*, as shown clearly in Fig. 2, and to the back of each plate *d*, a V-shaped plate *e*, is attached. At the inner parts of the V-shaped plates *e*, adjustable plates *f*, are secured. These plates *f*, are shown clearly in Fig. 2, and they are attached to the inner parts of the plates *e*, by screws *f'*, so that they may be adjusted to regulate the size of the issues *f''*. This will be clearly understood by referring to Fig. 2, in which one of the plates *f*, is shown in two different positions, one position, being represented by dotted lines. At the ends of the parts *d''*, of the plates *d*, plates *g*, are attached by joints *h*. These joints permit the plates *g*, to work or vibrate to a certain extent, stops *i*, *i'*, controlling the distance, see Fig. 2, in which one of the plates *g*, is shown in two different positions, one position being in red lines.

The operation of the wheel is as follows:—The water passes through the scroll A, and acts against the buckets as usual, the discharge of the water through the issues *f''*, being controlled by adjusting the plates *f*. This is an important feature of the invention for the discharge of water from the wheel may be made commensurate with the supply and the velocity of the wheel maintained under varying heads, or under varying pressure of water, and the maximum power due to the pressure whether it be greater or less, obtained in all cases.

In case stones, sticks or other hard foreign substances should pass into the scroll A, said substances could not as heretofore injure or break the buckets G, for the plates *g*, would be turned back, as shown in red Fig. 2, and the obstruction *h'*, shown in red, either allowed to pass through the issue or fit into the bucket, from which it could be removed without difficulty by raising the wheel or by having a round hole made in the top of the scroll A. This feature of the wheel is important for it frequently occurs that hard substances enter the scroll and cause the breakage of several buckets before the wheel can be stopped. By my invention this difficulty is fully obviated.

I do not claim the employment or use of curved buckets or those having surfaces composed of two planes placed at right angles with each other, for buckets of such form or its equivalent has been previously used; but,

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

1. The employment or use of the adjustable plates *f*, attached to the inner parts of the plates *e*, of the buckets G, substantially as and for the purpose set forth.

2. Providing the buckets G, with adjustable plates *g*, arranged substantially as shown to prevent injury to the buckets by the entrance into the scroll of hard foreign substances as described.

WILLIAM WALKER.

Witnesses:

MORGAN L. DRAKE,

JOSEPH R. BOWMAN.