2 Sheets Sheet 1.

W. Snodgrass.

Water-Wheel.

No 73400 Patented Jan. 14, 1868.

Fig. 1.

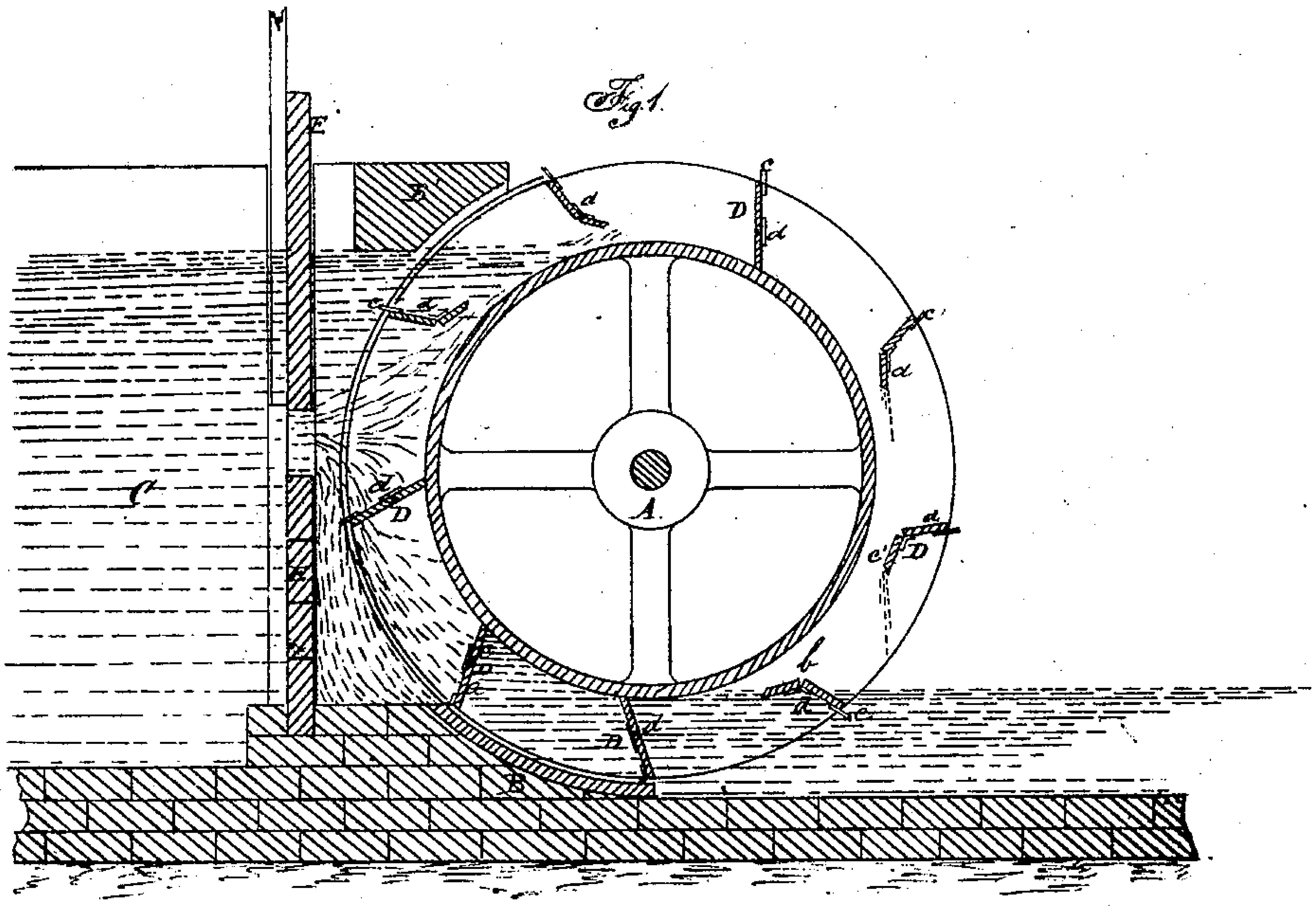
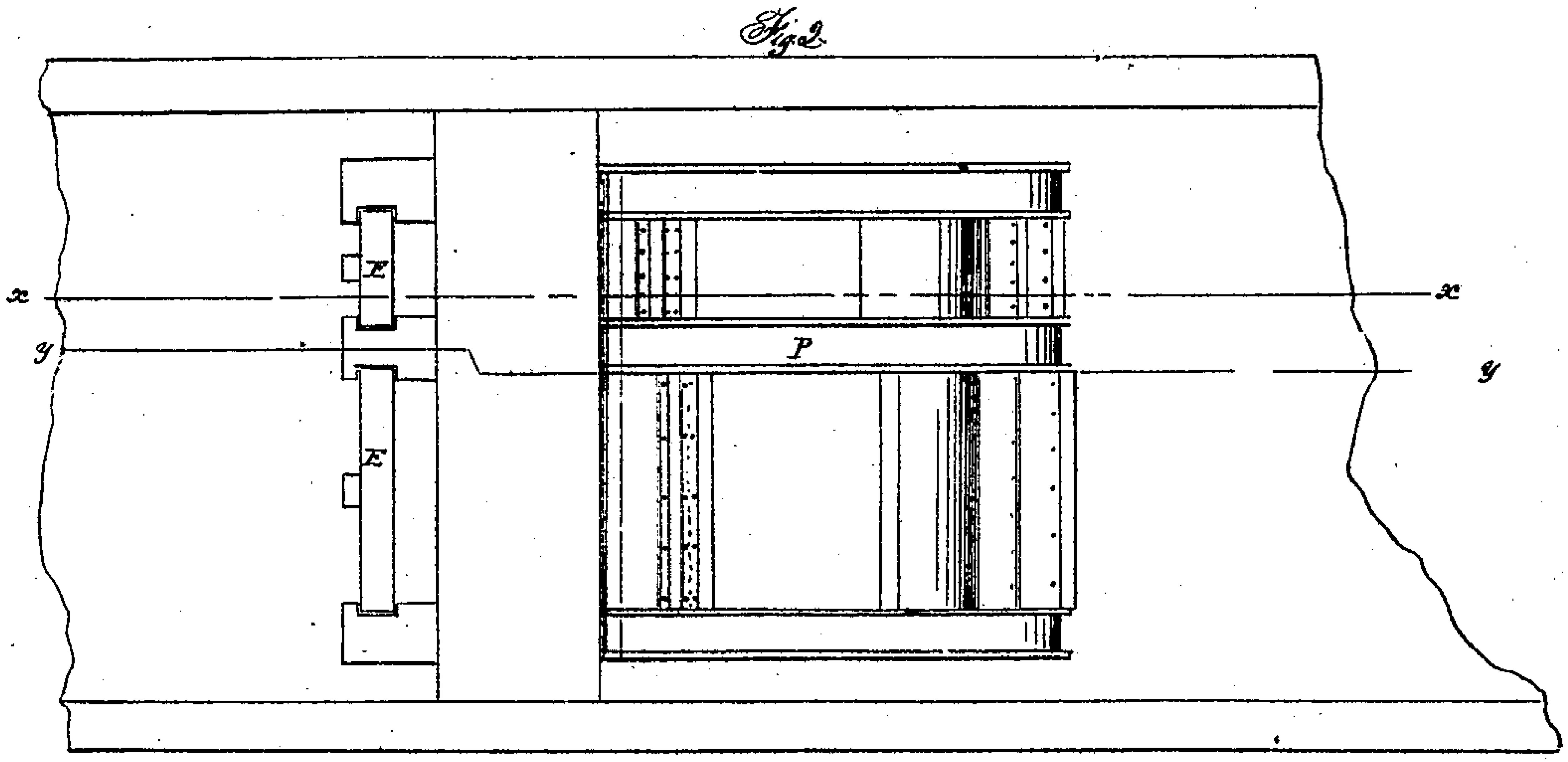


Fig. 2.



Witnesses
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J A Service

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2 Sheets-Sheet 2.

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Fig. 3.

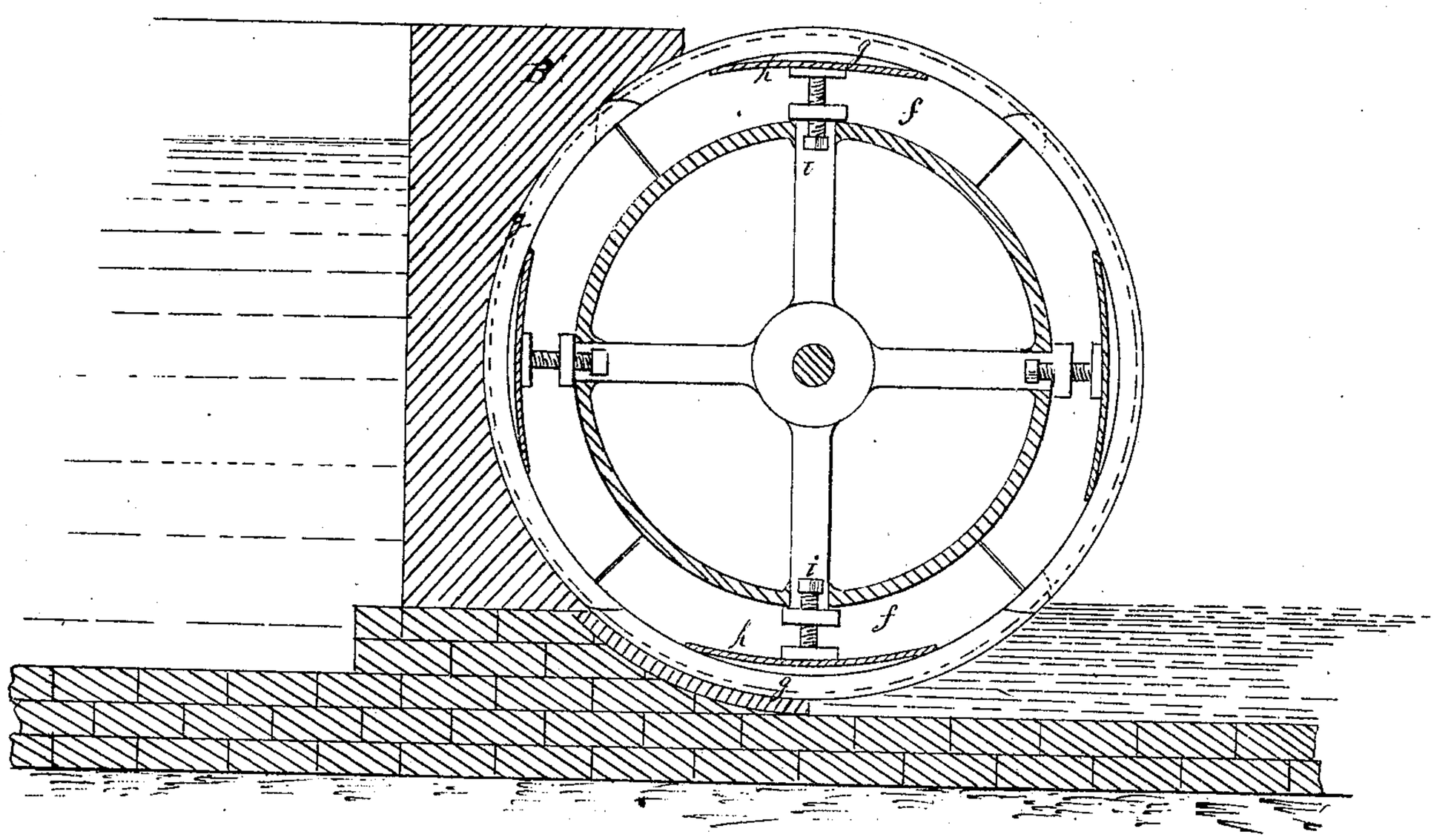


Fig. 4.

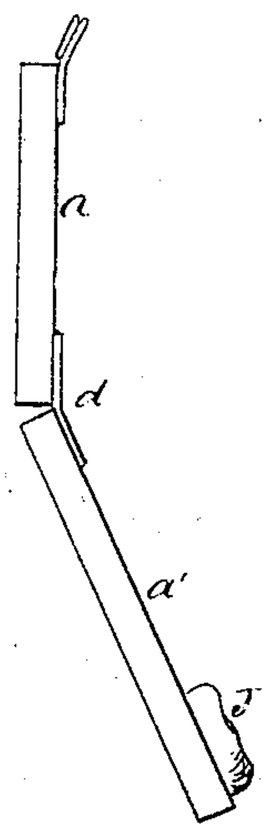
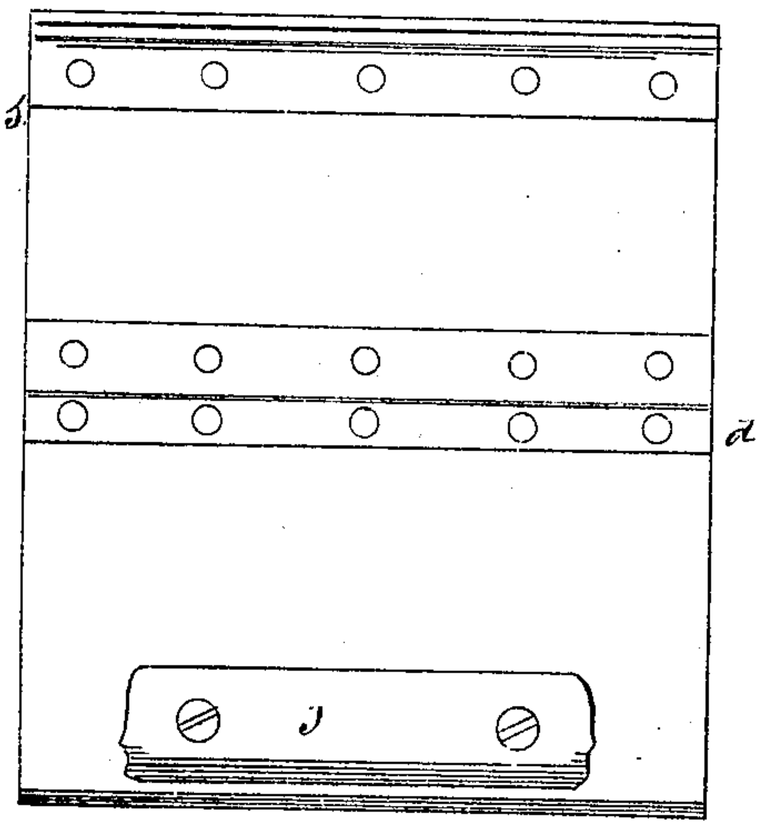


Fig. 5.



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United States Patent Office.

WILLIAM SNODGRASS, OF COLD SPRING, WISCONSIN.

Letters Patent No. 73,400, *dated January* 14, 1868.

IMPROVEMENT IN WATER-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM SNODGRASS, of Cold Spring, in the county of Jefferson, and State of Wisconsin, 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.

The object of my invention is to so construct a water-wheel that I may obtain the full, or nearly the full, percentage of power which is due from water under a given head; and the invention consists in providing for a free escape of air from the buckets or floats, and in bringing the full pressure of the water to act upon a given point of the wheel in a manner similar to the action of water on the piston of a water engine, that is, with very little leakage or loss; and to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

Figure 1 represents a sectional side view of the wheel through the line *x x* of fig. 2.

Figure 2 represents a top view.

Figure 3 represents a sectional side view through the line *y y* of fig. 2.

Figure 4 is an edge view of the float, showing the valves.

Figure 5 is a top view of the float, showing the same.

Similar letters of reference indicate like parts.

A represents the wheel, B the scroll or segment, against which the floats make a water-tight joint. C represents the head of water, D represents the float, E represents the gate, and B′ represents the bulk-head.

The body of the water-wheel A is made similar to that of a common overshot-wheel, the principal difference being in the construction of the floats or buckets, and this difference embraces the principal feature of my invention when combined with the scroll B. This float is made in two pieces hinged together, as seen at *d*. The outer portion *a* is secured to the rim of the water-wheel in the usual manner, but it has a flexible strip, *e*, upon its outer edge, which projects from it for the purpose of forming a more perfect joint on the scroll B. The inner portion of the float *a′*, being hinged to *a*, forms a valve, and its opening and closing are governed by the motion of the wheel, and by the pressure of water upon it.

When the float leaves the tail-water, as at *b*, the valve *a′* opens and lets the air enter behind it, and when the float reaches the surface of the head-water, the valve opens and allows the water to pass to the top, or to near the top, of the wheel. An entirely rigid float at this point would obstruct the motion of the wheel, and interfere with my designs.

The scroll B is a segment of a circle, whose inside diameter is about the same as that described by the rim of the wheel. It may be of any desired length, and is placed and fastened below the wheel, and below the level of the tail-water. The flexible strip *e* strikes this scroll when the wheel is revolving, and forms a water-tight joint between the float and the scroll. The rim of the wheel is kept water-tight against the scroll B, and the bulk-head B′, or chamber in which the water is confined by segments, whose circle shall be about the same as that of the rim of the wheel, with flat pieces of a little larger diameter attached, and which pieces shall be pressed outward by a spring, the spring being acted upon by a screw. This arrangement is shown in fig 3. *f* represent the segments; *g*, the flat pieces confined to the segments, but which are allowed to move upon it. *h* is the spring, and *i* the screw.

For the purpose of adapting my wheel to light service, I have shown a partition, P, and in reference to it, I have only to observe that the construction is the same, it only being, in fact, another wheel in all its essential parts. E′ represent boards or pieces of plank, which drop into grooves, and which allow the water to be discharged at any point from the bulk-head. J represents a weight upon the valve *a′* of the float, to assist it in closing under water.

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

The float D, with its valves *a′* and *e*, the scroll B, and the segment *f*, with the sliding piece *g*, the spring *h*, and screw *i*, when arranged and combined substantially as described and for the purposes set forth.

WILLIAM SNODGRASS.

Witnesses:

JOHN MCBEATH,

PROSPER CRAVATH.