

I. Jagger,
Turbine Wheel,
No 9,345, Patented Oct. 19, 1852.

Fig. 3.

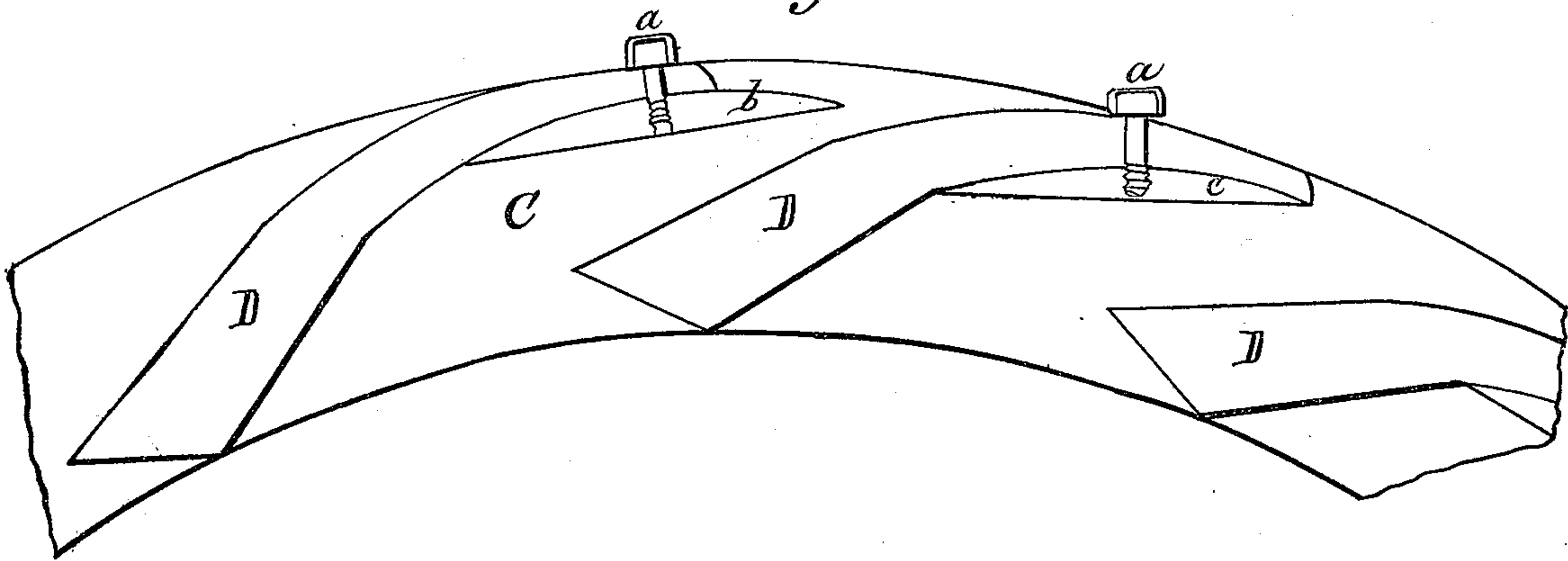
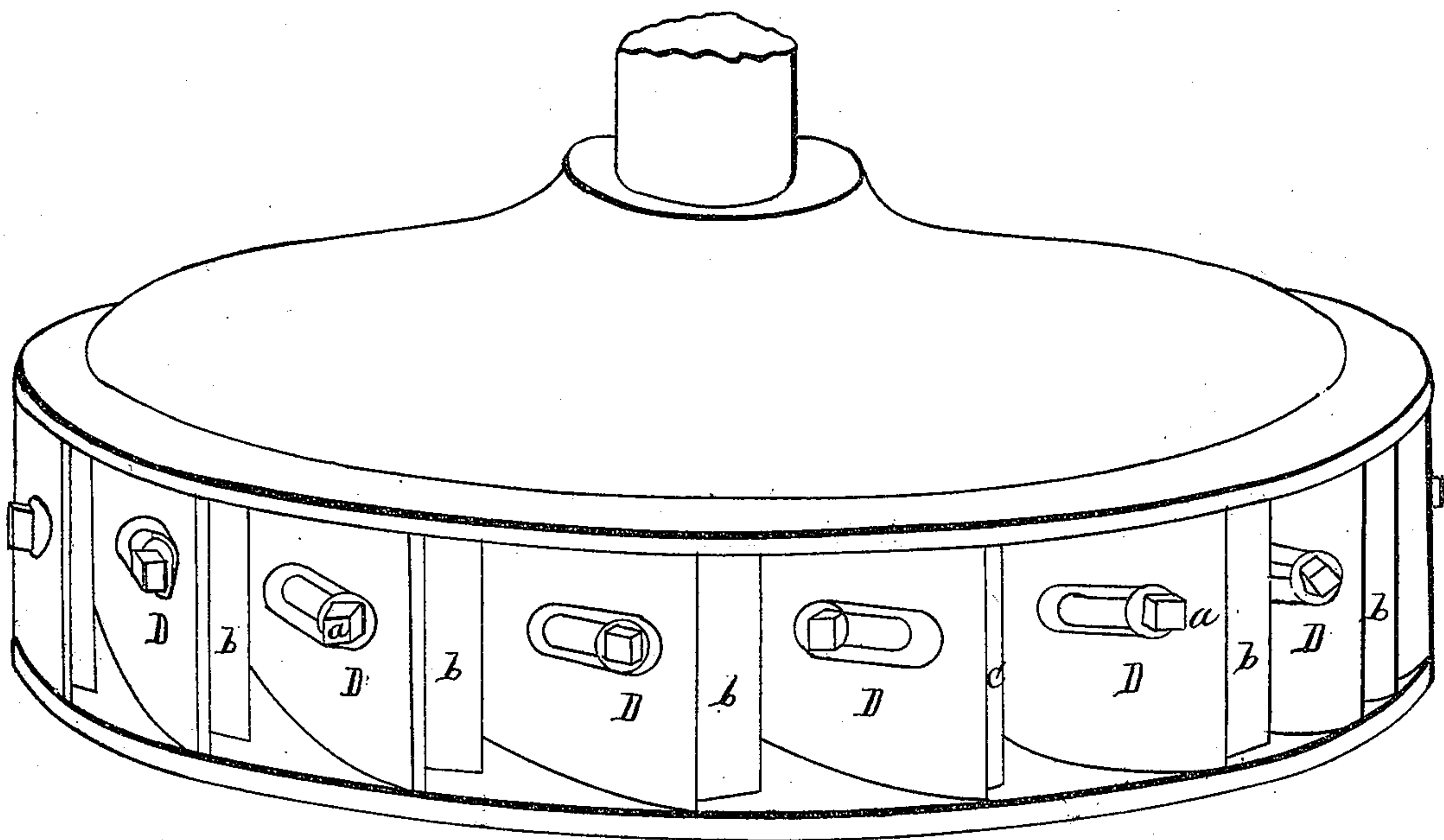
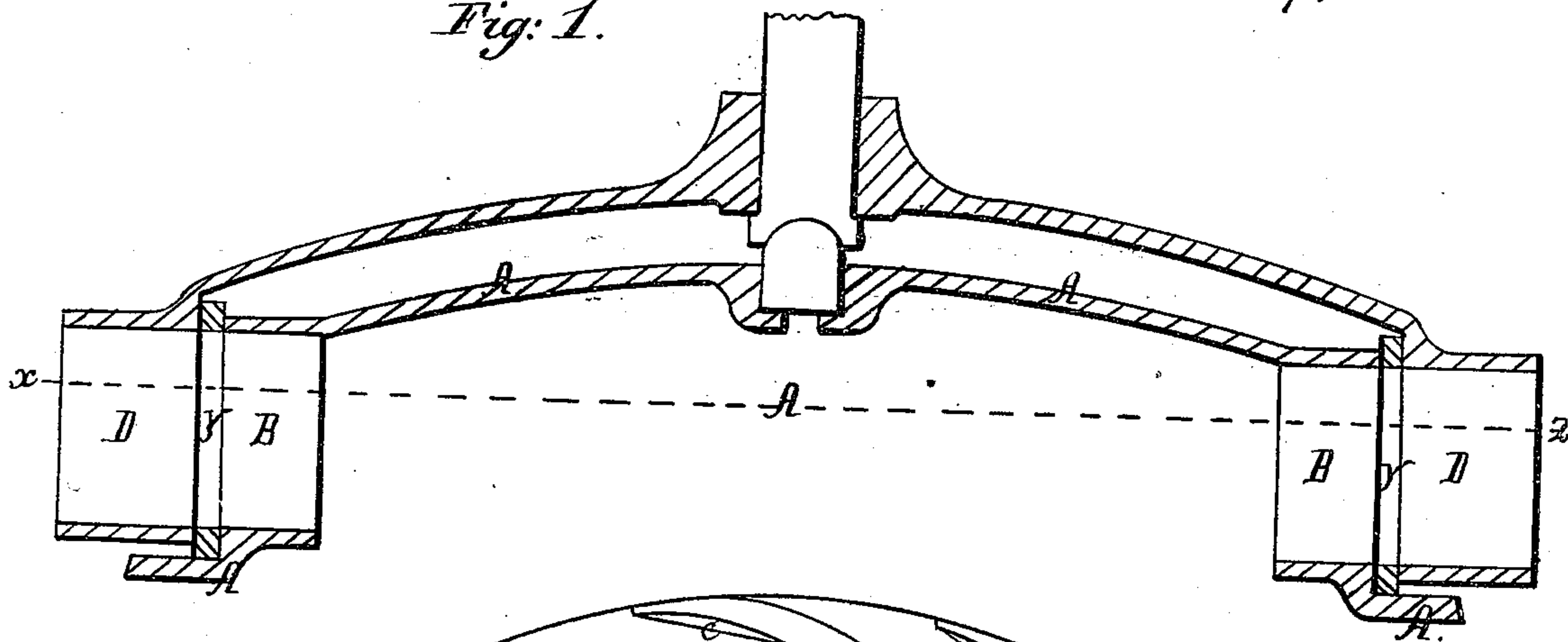


Fig. 4.



I. Jagger,
Turbine Wheel,
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Fig: 1.



UNITED STATES PATENT OFFICE.

IRA JAGGER, OF ALBANY, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 9,345, dated October 19, 1852.

To all whom it may concern:

Be it known that I, IRA JAGGER, of the city of Albany and State of New York, have invented a new and useful Improvement in Water-Wheels of the Kind Known as Turbine Wheels, the object of which is to regulate the supply to and flow from the same, so as to adapt their use to varying heads and pressure of water; and I declare the following specification, with the annexed drawings, forming part of the same, to be a full and accurate description thereof.

Similar letters denote the same parts in the different figures.

Figure 1 represents a profile section through the center, and Fig. 2 a plan horizontal section through $x y$ of Fig. 1, of a turbine wheel, A being the fixed part or chute-chamber with the chutes B B, C the wheel with its buckets D D. Fig. 3 is an enlarged sketch of a part of the periphery of the wheel with buckets; Fig. 4, a perspective view of the wheel as set up in its proper position.

My improvement consists in the application of a sliding gage or lip to the inner side of the extremity of each bucket, as shown at b and c , for the extension of the bucket, and fitted to the concave surface of the interior of the bucket, by means of which the orifice of discharge and its direction are regulated according to the head under which the wheel works and the amount of work to be done, thus enabling me to obtain the maximum effect with every varying head of water, which in some situations is very great at different seasons of the year, and also adapting the wheel to the work to be done. That also in many cases varies considerably. The lip is a rectangular plate of iron reaching from the top to the bottom of the bucket, its back surface next the bucket being curved so as to fit the curved surface of the bucket, its front surface being flat and a chord to the curve of the back surface. This lip is secured in its place by a screw-bolt a , sliding through a

slot in the bucket and tapped into the lip, and is regulated by sliding it (the lip) to or from the bucket lying directly in front of it, so as to diminish or increase the space between it and that bucket, as shown in Figs. 4 and 5, where the lip b is represented as nearly closing the exit-passage for water and the lip c as leaving the space between the buckets entirely open.

A gate is placed between the chute-chamber and the wheel, by which to regulate the supply of water to the wheel, so that there may be a due proportion between the quantity of water pressing into the wheel and the quantity flowing out of it. It consists in a movable cylindrical ring of metal fitting accurately and occupying the entire space between the outside of the chute-chamber and the inner periphery of the wheel, as shown at Figs. 1 and 2 at y and colored yellow. It is pierced with slots equal in size and corresponding in form to the external openings of the chutes, and has the edges of the slots beveled so as to deliver the water with as little interruption as may be in whatever situation they may be in reference to the openings in the chutes. The ring is moved or shifted round horizontally so as to close to a greater or less degree the openings of the chute by any convenient mechanical device.

I claim—

The application of an adjustable lip sliding on the inner face of the buckets of a turbine wheel to regulate the openings between the outer edges of the buckets and thereby the flow of water from the wheel, in manner and form substantially as set forth in the above specification, and thus adapting the lines of the turbine to the head of water and amount of work to be done, however varying.

IRA JAGGER.

Witnesses:

RICHD. VARICK DE WITT,
JAMES B. SANDERS.