H. Ferguson,

Water Wheel,

No. 3,502, Patented Mar. 20, 1844.

Fig. 1.

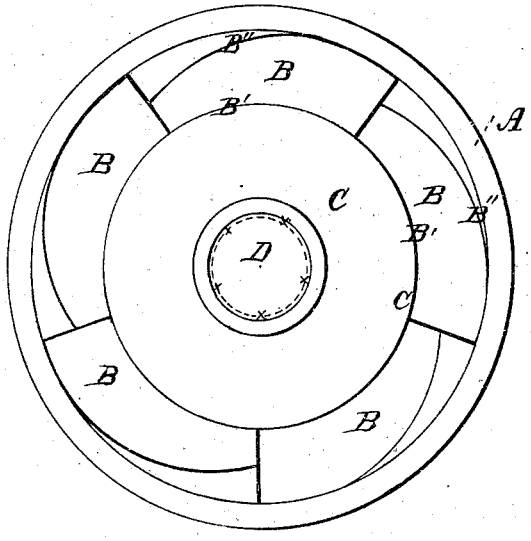
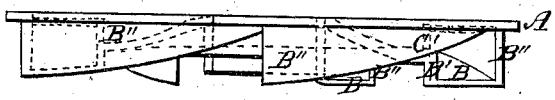


Fig. 2.



UNITED STATES PATENT OFFICE.

HIRAM FERGUSON, OF RICHLAND, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **3,502**, dated March 20, 1844.

To all whom it may concern:

Be it known that I, HIRAM FERGUSON, of the town of Richland, in the county of Oswego and State of New York, have invented a new and useful Improvement on Nelson Johnson's Water-Wheel, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a plan of the wheel. Fig. 2 is a side elevation.

This wheel is cast like other reaction-wheels in use, except in the particulars hereinafter described, which constitute the improvements claimed by me.

The center or core *c* of the wheel is cast of a concavo-convex shape, and where it joins the buckets is below the horizontal plane of the outer rim A of the wheel and with an aperture D in the center to receive the shaft, upon which it is made fast. The bottoms of the buckets B are segmental inclined planes, gradually increasing in size from the upper end, or where the water enters the wheel, to the lower end, where the water is discharged. The concave edge of said bottom of the bucket (next the center) is the segment of a circle concentric with the circumference of the wheel and of lesser diameter than the wheel. The convex or outer edge or line of union with the side and bottom of said bottoms of the buckets are not concentric with the inner or concave edge, but are described from the points *x* on the dotted circle, described from the center of the wheel. The outer and inner sides of the buckets B′ B″ are spherical triangles, following the lines of or coincident with the aforesaid concave and convex edges of the bottom of the bucket and are placed in a vertical position, having the upper edge of the outer side horizontal and against the under side of the rim, and the top of the inner side coincident with the upper surface *c′* of the perimeter of the core *c*. The ends of the aforesaid sides next the outlets are vertical, or nearly so. The rim A of the wheel is circular and horizontal, scalloped at the buckets to correspond with the outer sides thereof, at which places the rim is slightly depressed.

The under side of the core is made concave.

I do not claim the gradually-enlarged buckets as used in Nelson Johnson's water-wheels and others in use; but

What I do claim as my invention, and which I desire to secure by Letters Patent, is—

The peculiar manner in which I form the issues of my buckets—that is to say, by making the inner curves of the buckets, or those nearest the center, segments of a circle which is concentric with the circumference of the wheel and of less diameter, and the outer curves of the buckets, or those that are farthest from the center, segments of circles of the same diameters described from the points *x* on the dotted circle of Fig. 1 of the annexed drawings, the inner and outer sides of the buckets being spherical triangles and nearly vertical when the wheel turns in a horizontal position.

HIRAM FERGUSON.

Witnesses:

WM. P. ELLIOT,

A. E. JOHNSON.