A. Smith,

Water Wheel,

No. 21,578. Patented Sept. 21, 1858.

Fig: 1.

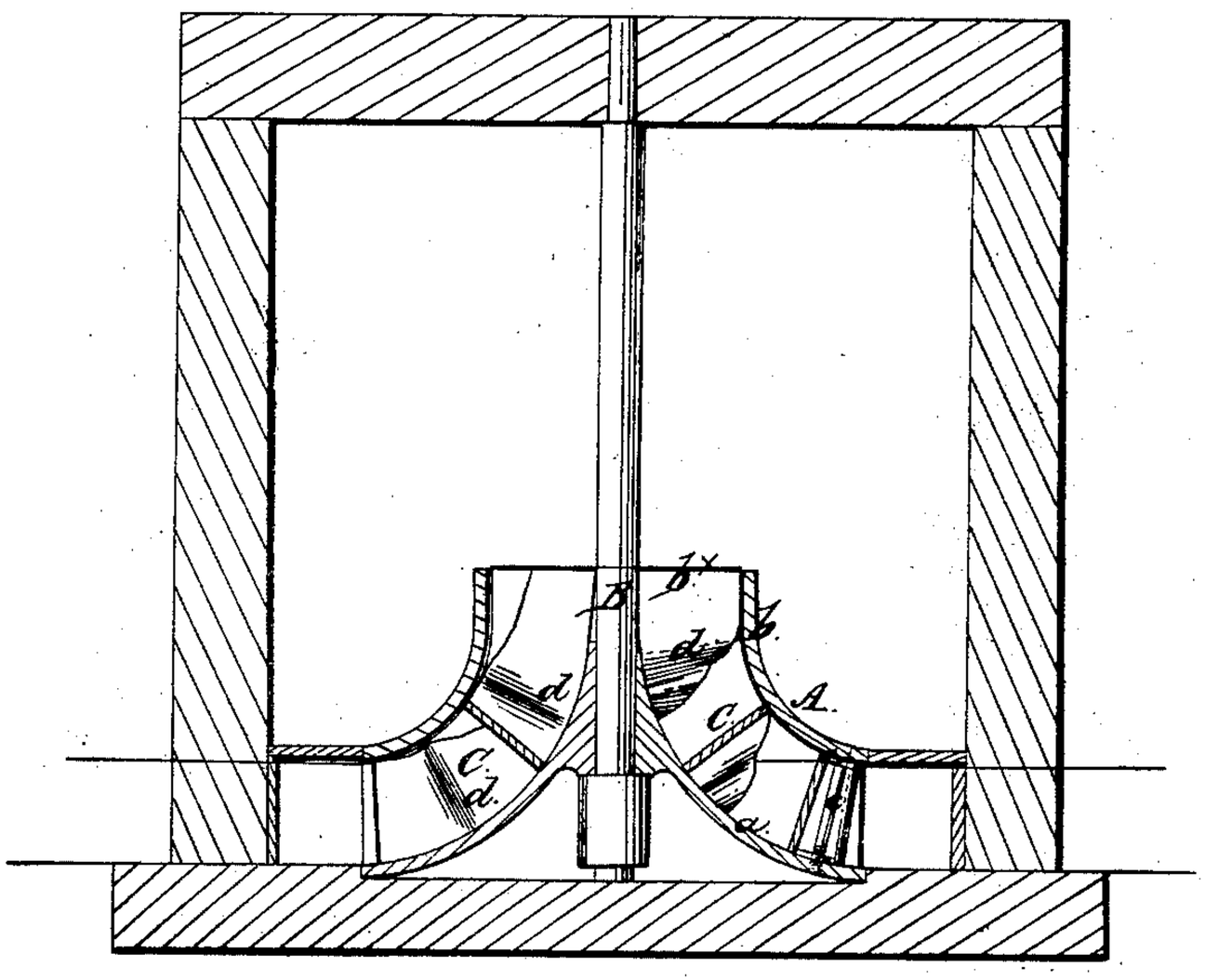
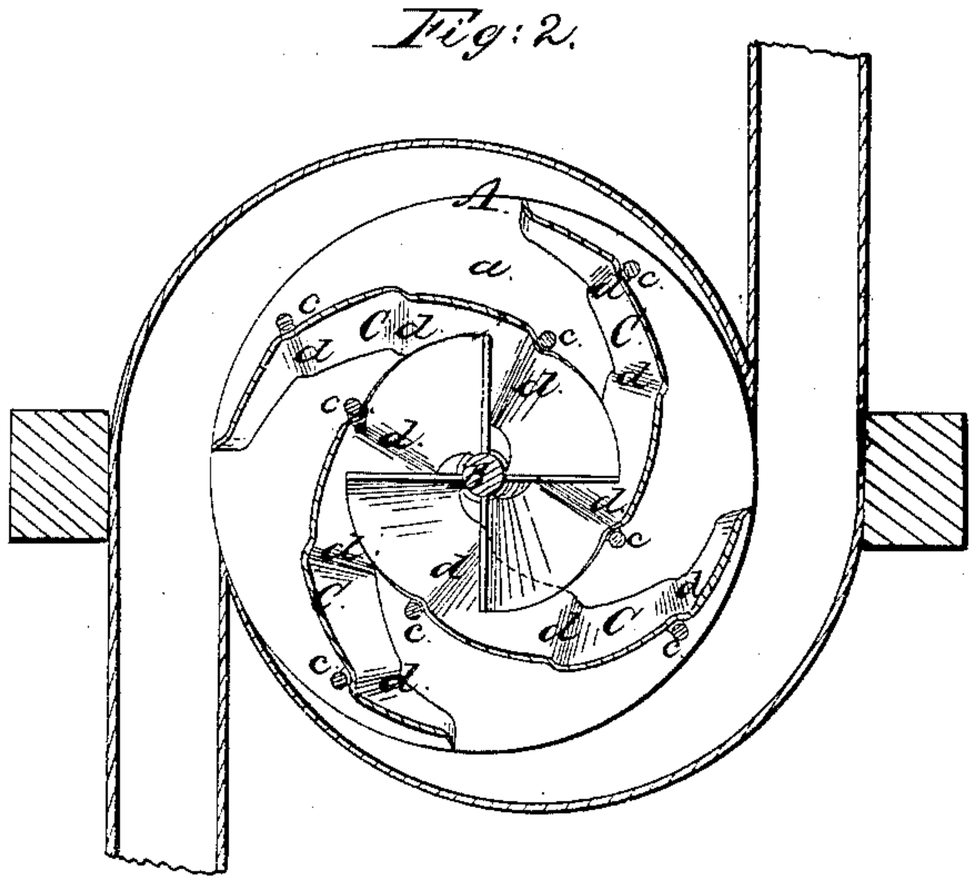


Fig: 2.



UNITED STATES PATENT OFFICE.

ALPHA SMITH, OF SAUQUOIT, NEW YORK.

IMPROVED WATER-WHEEL.

Specification forming part of Letters Patent No. **21,578**, dated September 21, 1858.

To all whom it may concern:

Be it known that I, ALPHA SMITH, of Sauquoit, in the county of Oneida and State of New York, have invented a new and Improved Horizontal 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. Fig. 2 is a horizontal section of same, taken in the line *x x*, Fig. 1.

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

The object of this invention is to obtain the full effective force of the water from the time that it enters the wheel until it leaves it, the water passing entirely through the wheel from periphery to center.

The invention consists in having the buckets of the wheel of curved form and provided with ledges or projections, as hereinafter fully shown and described, so that each individual bucket will virtually consist of a series of buckets extending from the periphery to the center of the wheel, and against which the water will act successively in its passage through the wheel and a corresponding relative speed observed between the water and the wheel at all points, whereby the desired effect is obtained.

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

The body of the wheel A is formed of two conical shells *a b*, the bottom one *a* being firmly secured to its shaft B, which is in a vertical position and secured in a proper framing. The upper shell *b* is placed directly over the lower shell *a*, a suitable space being allowed between them, and the buckets C are placed between the two shells, the buckets serving as a support to the upper shell *b*, the latter being secured to the lower shell by bolts *c*. The upper shell *b* has an opening $b^{\times}$ at its upper end, said opening forming the discharge-apertures of the buckets, which extend from the periphery of the shell *b* to its inner edge.

The buckets C are each curved, as shown clearly in Fig. 2, and each bucket is so formed that a series of buckets or prominences *d* are obtained. (Shown rather more clearly in Fig. 2.) Four buckets C are represented in the drawings; but more may be used, if necessary, the number being regulated according to the size of the wheel. The number of ledges or prominences *d* may also be regulated according to the size of the wheel and length of buckets.

The shells *a b* may be of cast metal, and also the buckets C, the shaft B being of wrought metal. At least that would be the preferable material. The wheel is inclosed within a scroll, (shown in red,) which extends up to the edge of the upper shell *b*. This scroll has two induction-passages, the eduction or discharge passage being at $b^{\times}$.

The operation is as follows: As the water enters the wheel it strikes against the outer and lower edges of the buckets C and passes upward between the two shells *a b*, sucessively acting against the prominences *d*, which serve as buckets or opposing surfaces for the water to act upon, and as these buckets approach the center of the wheel their speed of course proportionately diminishes, and this diminution of speed corresponds to the gradually-decreasing speed of the water, so that the latter will act efficiently against the buckets at all points or during the whole of its passage through the wheel.

I am aware that curved buckets have been used and applied to horizontal water-wheels in various ways, and I am aware, also, that buckets have been placed between conical shells. I therefore do not claim, broadly, the parts above named; but

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

Constructing the buckets C with ledges or prominences *d*, the buckets being curved and fitted between the shells *a b*, which form the body of the wheel A, and arranged relatively therewith, substantially as and for the purpose set forth.

ALPHA SMITH.

Witnesses:

GEO. C. ELLIOTT,

WILLIAM KNIGHT.