

N. F. Burnham

Water Wheel,

No 37,733,

Patented Feb. 24, 1863.

Fig. 1.

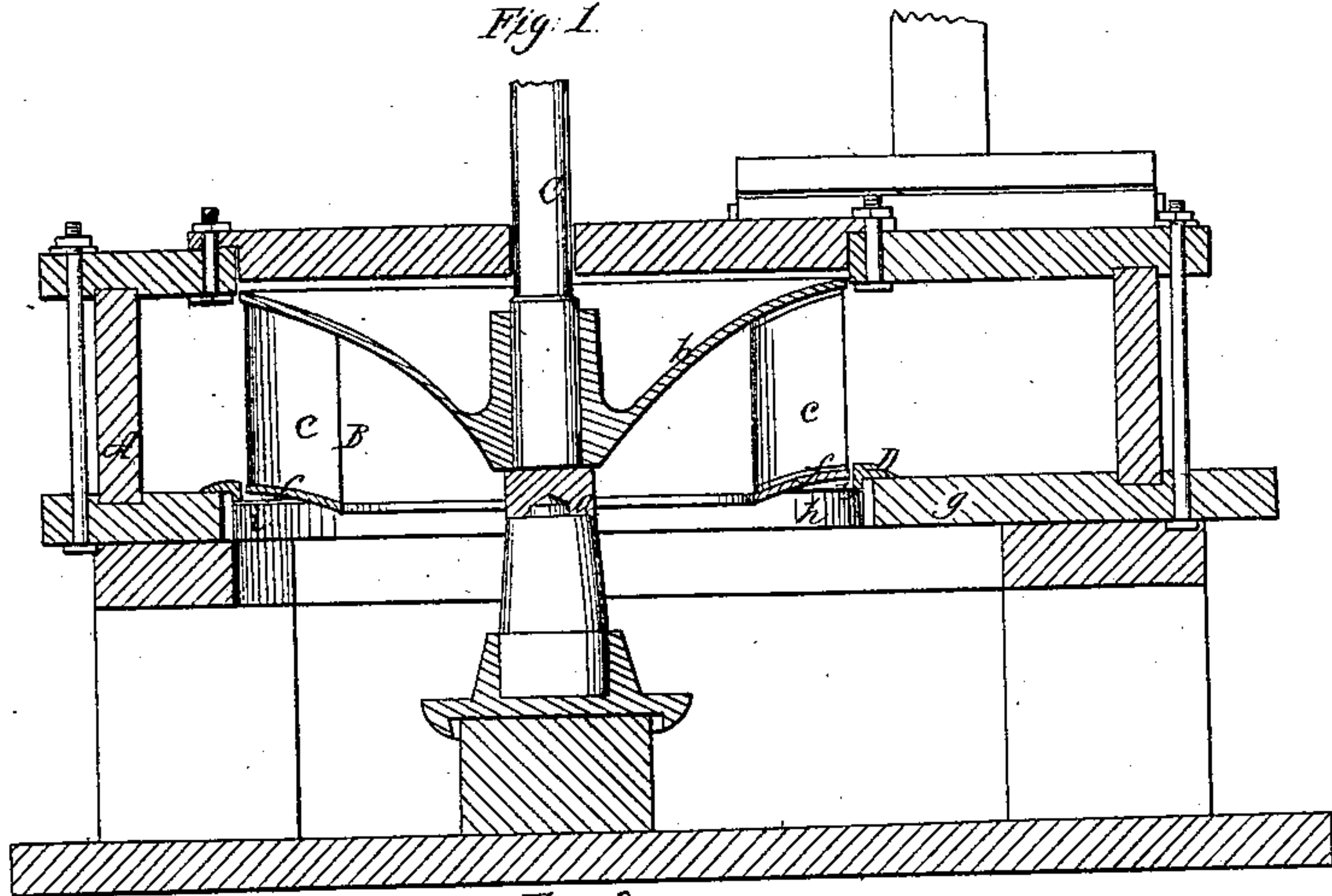
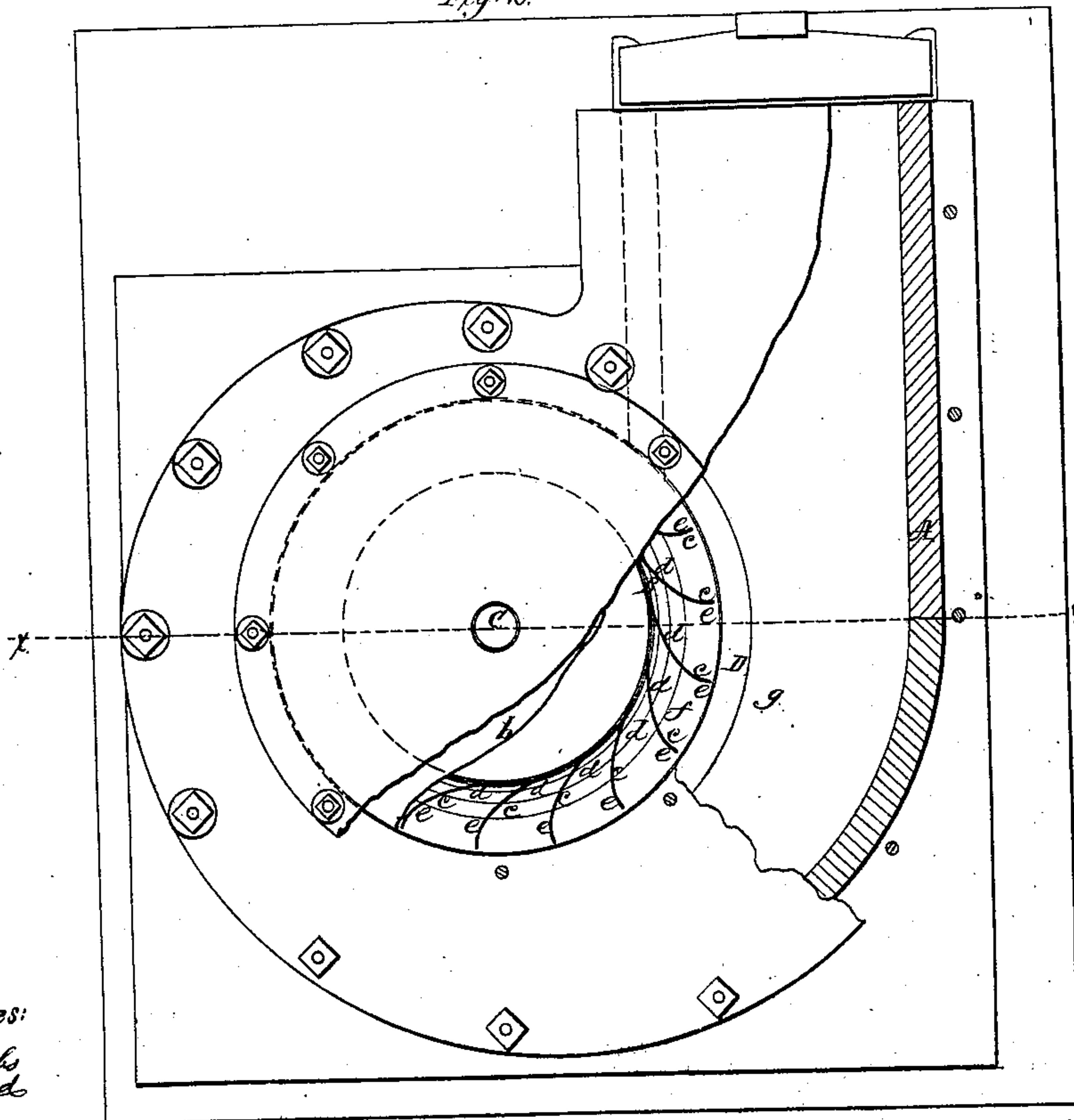


Fig. 2.



Witnesses:
Hubbards
Sw. Rud

Inventor:
N. F. Burnham.
per M. W. L. Q.
Attorney

UNITED STATES PATENT OFFICE.

N. F. BURNHAM, OF YORK, PENNSYLVANIA.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 37,733, dated February 24, 1863.

To all whom it may concern:

Be it known that I, N. F. BURNHAM, of York, in the county of York and State of Pennsylvania, 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 accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my invention, taken in the line *xx*, Fig. 2. Fig. 2 is a plan or top view of the same, partly in section.

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

This invention relates to an improvement in that class of water-wheels which are placed on a vertical shaft, are inclosed within a scroll, and discharge the water at the center, and which are commonly termed "center-discharge wheels."

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

A represents the scroll of the wheel, which may be constructed in the usual manner, and B is the wheel which is placed on a vertical shaft, C, the lower end of which is stepped at *a*, as shown in Fig. 1. The scroll A is constructed of wood, and the wheel of metal. The top plate, *b*, of the wheel is in the form of an inverted concave cone, and it is provided with a central hub, which is firmly keyed to the shaft C.

The buckets *c* of the wheel have a tangential position, as shown in Fig. 2, the buckets being nearly or quite straight at their inner parts, as shown at *d*, and curved at their outer parts, as shown at *e*. The upper ends of the buckets are attached to the top plate, *b*, and they are attached at their lower ends to a rim, *f*, which has a convex upper surface about corresponding to the curvature of the portion of the top plate, *b*, of the wheel directly above it, as shown in Fig. 1.

The top plate, *b*, of the wheel extends down nearly to a level with the rim *f*, the under sur-

face of said plate *b* having a gradual curve, which, in connection with the curved rim *f*, deflects the water downward as it passes through the wheel, preventing all eddies and reaction, as there are no angles nor abrupt prominences presented to the water, and the latter flows through the wheel in an unbroken smooth column, and acts in the most favorable or efficient manner on the buckets *c*.

The bottom *g* of the scroll A has a circular opening, *h*, made in it, and this opening is a trifle larger in diameter than the diameter of the rim *f*. D is a ring of metal, provided at its inner edge with a pendent flange, *i*. The upper horizontal part of this ring rests loosely on the bottom *g* of the scroll A, and the rim *f* of the wheel B is fitted and works within the flange *i*, the rim *f* fitting as snugly as may be within the flange *i* without creating any undue friction. The flange *i* is smaller in diameter than the opening *h*, as shown in Fig. 1, and the ring D is consequently allowed some lateral play. By this arrangement it will be seen that an important result is attained. The metal ring prevents the edges of the opening *h* being worn by the rim *f*, for the ring is allowed, on account of its lateral play or movement, to adjust itself with the wheel in case of the lathe getting a little inclined or out of center. If the ring D were not employed, and the rim *f* fitted snugly within the opening *h*, the edges of the latter would soon be worn by slight changes in the position of the wheel and much loss of power occasioned by leakage of water.

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

The ring D, provided with the flange *i*, and arranged in relation with the opening *h*, the scroll and rim *f* of the wheel to operate as and for the purpose herein set forth.

N. F. BURNHAM.

Witnesses:

E. G. SMYSER,
LEONARD KOONS.