H. W. HAWLEY.

Water-Wheel.

No. 166,004. Patented July 27, 1875.

Fig: 1.

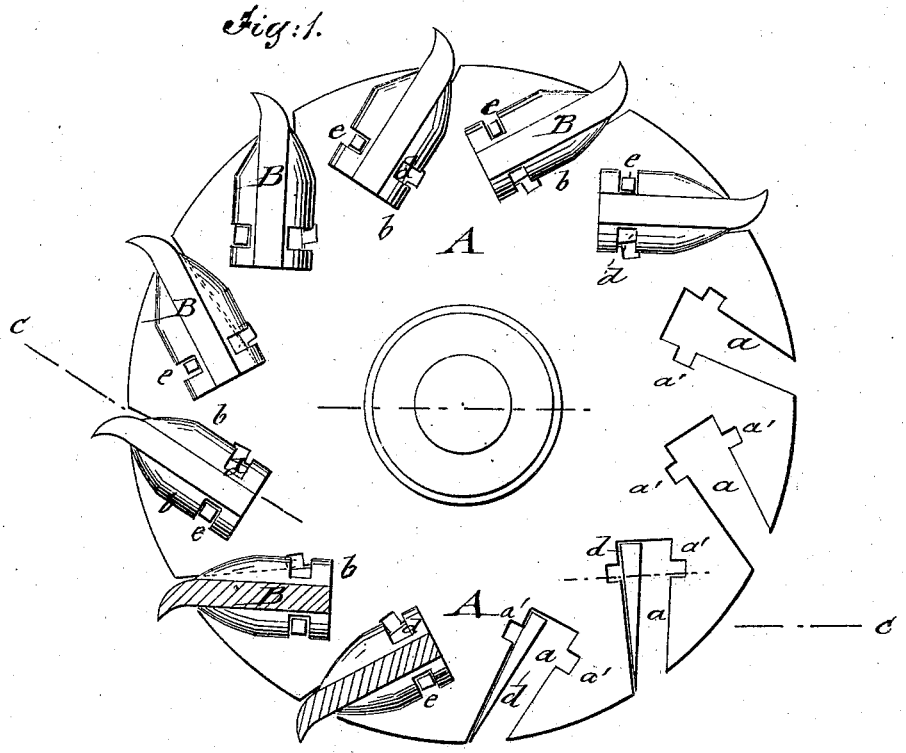


Fig: 2.

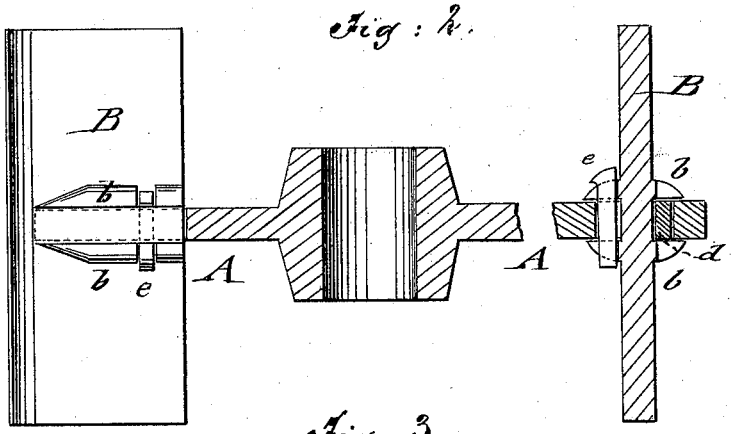
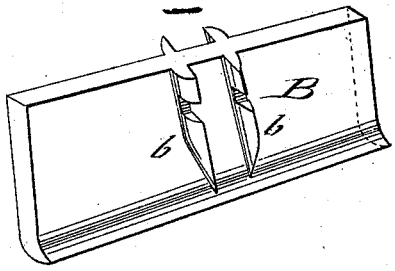


Fig: 3.



WITNESSES:

Chas. Nida.

A. F. Terry

INVENTOR:

H. W. Hawley

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HARVEY W. HAWLEY, OF WALTON, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **166,004**, dated July 27, 1875; application filed June 26, 1875.

To all whom it may concern:

Be it known that I, HARVEY W. HAWLEY, of Walton, Delaware county, New York, have invented a new and Improved Water-Wheel, of which the following is a specification:

Figure 1 represents a top view of my improved water-wheel, showing some buckets in section. Fig. 2 is a vertical transverse section on the line *c c*, Fig. 1; and Fig. 3 is a perspective view of a bucket detached.

Similar letters of reference indicate corresponding parts.

My invention relates to an improved water-wheel, that may be used either in horizontal or vertical position with great effect, utilizing nearly the whole head of water, and allowing the adjustment of the buckets to different angles to the wheel, if desired.

The invention consists of a water-wheel with central web and solid or detachable buckets extending to equal distance and suitable angles therefrom.

In the drawing, A represents a solid web of circular shape that forms the central part of the wheel, which may either be used in horizontal position in the manner of a turbine, or in a vertical position as an overshot wheel. The buckets B are either cast in one piece with the web extending at equal width at each side of the same, or made detachable to be adjusted by means of recesses *a*, with smaller side extensions *a'*, into which the buckets B, provided with recessed side flanges *b*, are inserted. The buckets B are adjusted by wedge-pieces *d* to either side of the recesses *a*, so as to be set to the greater or smaller head of water, and are rigidly secured to the web by wedge-keys *e*, driven through the recessed flanges *b* of the buckets, and the recesses *a* of the web.

The water strikes against the outer curved and tapering edges of the buckets, and passes then between the buckets toward the central part of the wheel. The central position of the web divides the buckets, so that virtually two wheels are furnished to which the water is conducted in the horizontal position of the wheel from the flume by a surrounding casing to be discharged at the top and bottom of the same.

The solid web dispenses with the obstruction to the water-pressure by radial arms and other parts. In the vertical position, the two-fold action of the wheel is obtained in similar manner, and a large percentage of the water-power utilized.

The wheel may be made entirely of cast metal in a strong and durable manner, and the buckets readily set by driving out the wedge-keys, changing the position of the buckets by the side wedges, and reinserting the keys at the opposite side.

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

1. A water-wheel made of a central solid web, and buckets extending at equal width to both sides of the same, substantially as specified.

2. The combination, with the recessed web, of a detachable bucket, set by side wedges in position, and locked by lateral wedge-keys, substantially as specified.

HARVEY W. HAWLEY.

Witnesses:
M. W. MARVIN,
O. J. ELLS.