J. W. De HAVEN.

WATER-WHEELS.

No. 194,897. Patented Sept. 4. 1877.

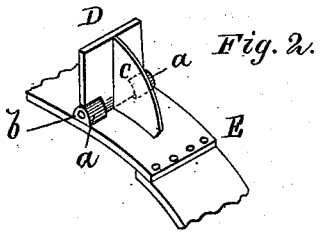
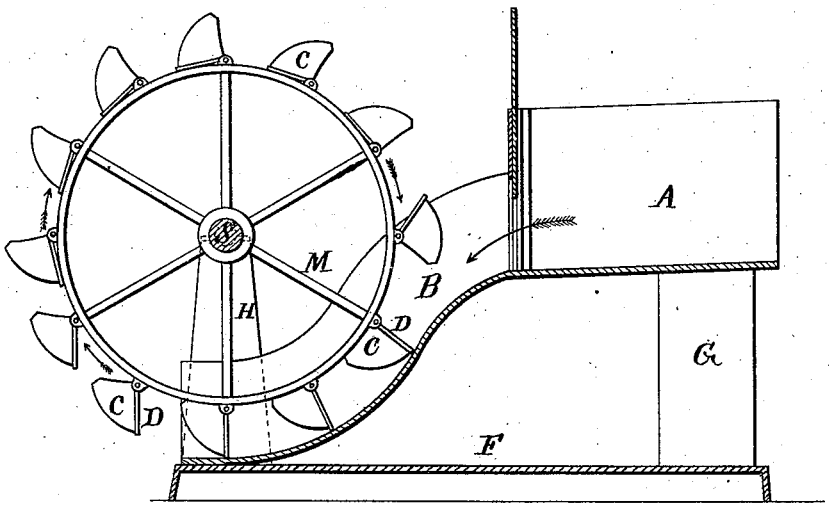


Fig. 2.

Fig. 1.



WITNESSES

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JAMES W. DE HAVEN, OF KOKOMO, INDIANA.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **194,897**, dated September 4, 1877; application filed August 10, 1877.

To all whom it may concern:

Be it known that I, JAMES W. DE HAVEN, of Kokomo, in the county of Howard, and in the State of Indiana, have invented certain new and useful Improvements in Water-Wheels; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a water-wheel and chute, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of the water-wheel, with a longitudinal section of the chute. Fig. 2 is a perspective view of a portion of the wheel-rim, with bucket and bucket-support.

A represents the fore-bay, supported upon rests G G, rising from the foundation F. B is the chute, passing from the fore-bay A, and curved, substantially as shown.

H is the head-block or supports for the wheel-shaft S, on which latter is secured a series of radial T-shaped arms, M, and to these arms the rim E is bolted. This rim is made of boiler-iron, in sections, and bolted on the T-arms, so that any or all the sections may be taken off and replaced by others, if desired.

The rim E is on the outside, at suitable intervals, provided with perforated lugs or ears *a a*, arranged in pairs, and between each pair is hinged a flat bucket, D, by means of a rod, *b*, as shown. Each bucket D is, on one side, provided with one or more arms or supports, C, extending from it at right angles.

As the water passes through the chute B under the wheel, it will have a tendency to elevate the wheel, and thus make it lighter on the journals. It can be used with very little or very great fall, and the backwater will not tend to retard the motion, as the buckets lift out of the water vertically, and blocks, chunks, &c., may pass under the wheel without injuring it or retarding the motion.

By withdrawing the rod *b* for any bucket, such bucket may be taken off and replaced by another, should occasion demand, in very short time.

By the construction of the wheel, it will be seen that when the buckets and sectional rim are removed there is nothing left to handle but the shaft and arms.

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

1. In a water-wheel, the combination of the rim E, with perforated ears *a*, and the removable buckets D, hinged between said ears by the rods *b*, substantially as herein set forth.

2. In a water-wheel, a hinged bucket, D, provided with one or more supports, C, substantially as herein set forth.

3. The combination, with the wheel S M E, having hinged buckets D, of the chute B, curved, as shown, whereby the water is made to elevate the wheel, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of July, 1877.

JAMES W. DE HAVEN.

Witnesses:
W. H. MCCLAIN,
J. N. LOOP.