

H. WALTNER.
WATER-WHEEL.

No. 174,750.

Patented March 14, 1876.

Fig. 1.

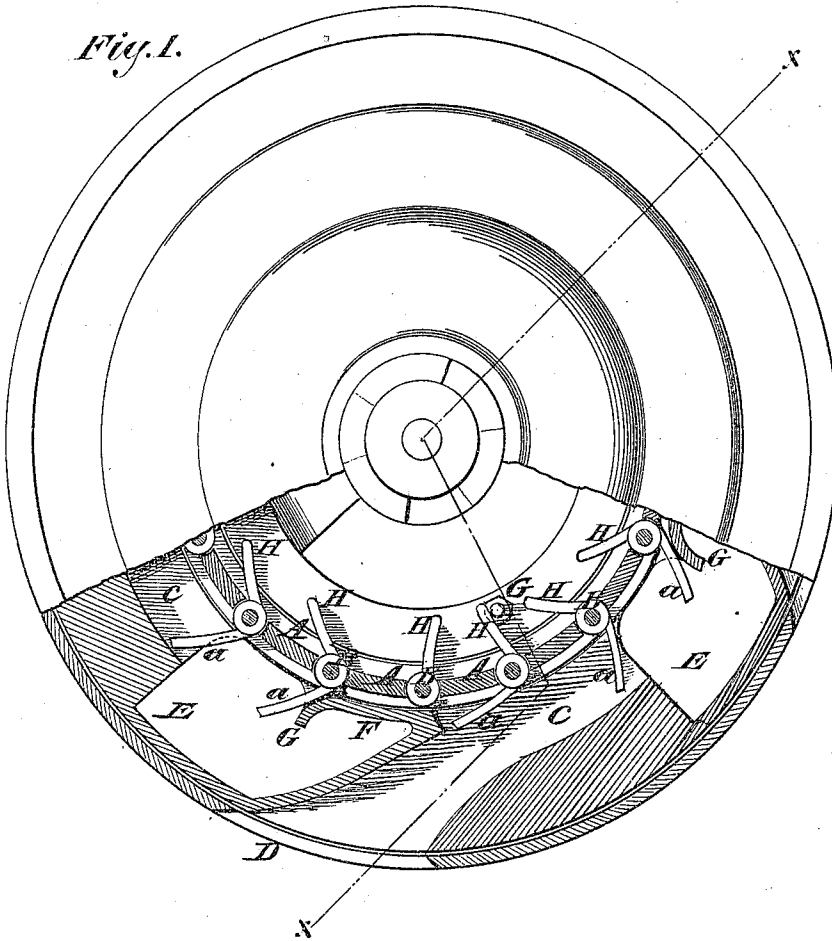
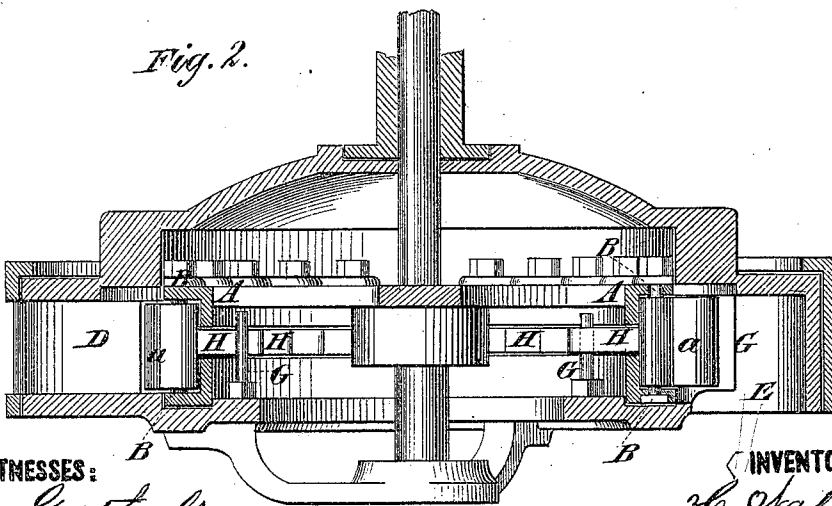


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY WALTNER, OF HAMILTON, OHIO.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **174,750**, dated March 14, 1876; application filed January 15, 1876.

To all whom it may concern:

Be it known that I, HENRY WALTNER, of Hamilton, in the county of Butler and State of Ohio, have invented a new and Improved Water-Wheel, of which the following is a specification:

The invention consists of buckets hinged to the periphery of the wheel to close in for passing cut-off partitions, employed to utilize the dead pressure of the water, the said buckets being provided with an arm which extends inside of the periphery of the wheel and strikes a stud on the lower part of the case, which throws out the bucket so as to take the water immediately after passing the cut-off.

Figure 1 is partly a plan view and partly a horizontal section of the wheel; and Fig. 2 is a transverse section taken on line *xx* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A is the periphery of the wheel, in which the buckets *a* are pivoted at B, so as to swing out to take the dead pressure of the water in passing along the channels C from the inlets D to the exhausts E, and to close in for passing the cut-off partitions F, which prevent back action of the water.

G represents studs in the lower part of the wheel-case and within the wheel-rim, located so that an arm, H, of the buckets comes in contact with them as soon as they have passed the partitions F, to swing them out for taking the water. They are closed by the partitions F, which are curved at G, when the buckets strike suitably for making an easy action.

The water enters on the sides of the casing through the gates, of which there may be three or more, and is so conducted that it strikes the wheel in a tangential direction at the same time the water opens one of the movable buckets of the wheel, which now shuts up the whole opening through which the water has to pass, so that the water must spend its full force on the bucket.

While the wheel is in operation there are four buckets employed to each gate. The first bucket is opened to receive the water; the second bucket carries the water to the opening in the lower part of the casing, where it is gradually discharged as the bucket moves on, thereby avoiding the jerk on the wheel

which would otherwise occur if the sudden forcible turning of the first bucket would not be resisted by the water between the first and second bucket gradually discharging. The third bucket moves right over the opening in the lower part of the casing, allowing the full discharge of the water. The fourth bucket strikes the partition which extends on one side of each gate toward, and close to, the periphery of the wheel, and in so striking the bucket is closely shut to the wheel. These partitions must closely fit to the wheel, and the wheel must be so tightly and accurately fitted to the casing as to prevent, as much as possible, the waste of water and any pressure of the water in a contrary direction.

The above-described wheel combines the following merits and advantages of a good water-wheel: *a.* It applies the water-power in a tangential direction as the most effective. *b.* It avoids any pressure of the water in a contrary direction. *c.* It prevents in a high degree the waste of water. *d.* It works with any head of water; also under back water. *e.* The action of the wheel can be adjusted to any given quantity or to any power required by the partial or entire opening of the gates. *f.* It employs, in the most effectual manner, the whole periphery of the wheel for the utilization of the water-power, thereby enabling it to realize the same power by a smaller wheel as if only part of the periphery of the wheel would be employed. *g.* It gives the advantage of the full pressure of the solid column of water of a given head of water, without the necessity of an accelerated motion, and consequently of an augmented use of water.

I am aware that it is not new to use spring-held buckets closed against cut-offs so as to produce a tangential impact of the water on wheel as soon as the bucket enters the chute; but what I claim is—

A water-wheel whose buckets are provided with inner arms H to strike studs G as soon as said buckets enter chutes C D, thereby opening one bucket to the full striking force of the water just as the preceding one enters the exhaust E, as and for the purpose specified.

HENRY WALTNER.

Witnesses:

W. E. BROWN,
WM. ARMSTRONG.