

W. J THOMPSON.
Water-Wheel.

No. 160,128.

Patented Feb. 23, 1875.

fig. 1

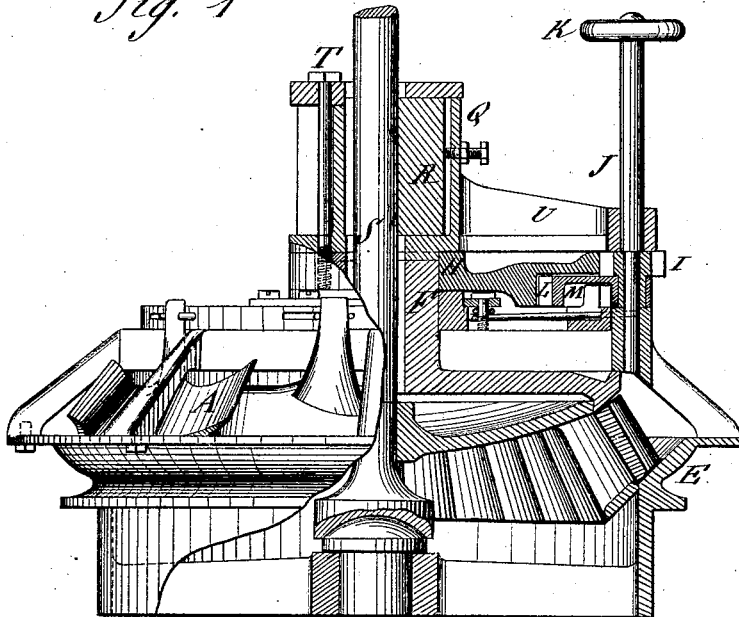
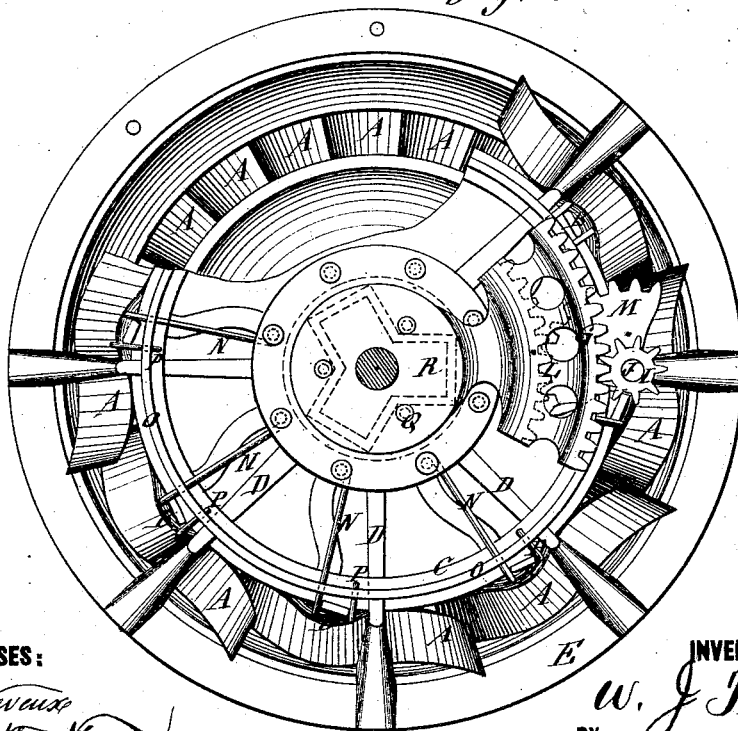


fig. 2



WITNESSES:

E. Newcomb
A. F. Terry

INVENTOR:

W. J. Thompson
BY *[Signature]*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM J. THOMPSON, OF SPRINGFIELD, MISSOURI, ASSIGNOR OF ONE-HALF HIS RIGHT TO SPRINGFIELD IRON-WORKS.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **160,128**, dated February 23, 1875; application filed October 31, 1874.

To all whom it may concern:

Be it known that I, WILLIAM J. THOMPSON, of Springfield, in the county of Greene and State of Missouri, have invented a new and useful Improvement in Water-Wheels, of which the following is a specification:

This invention relates to new and useful improvements in water-wheels, applying more especially to a water-wheel for which Letters Patent of the United States have already been granted to me; and the improvement consists in an improved mode of operating the gates; in a spring for each gate, to insure the simultaneous closing thereof; and in a three-chambered box around the main shaft, having an arm, which extends over the sector-gears and supports the pinion-shaft, as hereinafter set forth and described.

In the accompanying drawing, Figure 1 is an elevation of my improved water-wheel, partly in section. Fig. 2 is a sectional plan view with the cap-plate around the water-wheel shaft removed.

Similar letters of reference indicate corresponding parts.

A represents the gates which inclose the upper rim of the water-wheel, nine (more or less) in number, which are opened and closed by means of the upright arms B of the gates. C is a wheel, which rests upon the arms D of the outer casing E, and receives a revolving motion on the center or hub F of the casing by means of the sector G. This sector is confined to the center F by means of a ring-collar, H, and moves on the collar in the same manner as the wheel. I is a pinion on the upright operating-shaft J, upon the top of which is a hand-wheel, K, by means of which it is turned to operate the gates. The sector is double, having a set of cogs, L, (seen in dotted lines,) which engage with a sector, M, on the operating-shaft J. This sector M has also an extra set of cogs, which engage with cogs on the rim of the wheel C. N are springs attached to the eye of the wheel C, and radiate therefrom, and bear with a constant pressure against one side of the arms B of the gates. These springs pass through slots in the upper flange o of the rim of the wheel C. P are stationary pins in the periphery of this wheel, which are on the opposite sides of the arms B. (See Fig. 2.) When the wheel C is

turned these pins P bear against the arms B and open the gates. When the wheel is turned back, or in the opposite direction, the springs insure the simultaneous closing of the gates.

Q is a three-chambered box-casing, and R are segmental boxes confined in the casing around the water-wheel shaft S. This casing is seen in dotted lines in Fig. 2. The boxes form the journal-bearing of the shaft. T are bolts, by means of which the casing is attached to the hub E of the outer casing. U is an arm extending from the three-chambered casing Q, which supports the upper part of the operating-shaft J. The bottom of the casing is connected with the hub E by a clutch-coupling, so that the arm U is held rigidly to its place.

The arrangement of the gates with regard to the wheel, and the general form and construction of the wheel, are described in my former patent, and need not be repeated here, the object in the present invention being to remedy some defects and render my water-wheel more complete and perfect than it has heretofore been.

I am aware that gates have been operated by a simple pair of racks and pinions, one set placed at the top and the other at the bottom; but my gears are not so arranged, and are made to differ so in their relative action that a sufficient leverage is obtained to enable a governor to regulate the flow of water with promptness and accuracy. In ordinary gates this cannot be done by a governor during the sudden changes in the "labor" of wheels so liable to occur in mills and factories.

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

1. The combination, with wheel C, of mechanism G I and L M, arranged to increase the leverage on the gates, and thus allow the application of a governor.

2. In combination with the arms B of the gates A, the springs N, as and for the purposes described.

WILLIAM J. THOMPSON.

Witnesses:

D. H. ROOT,
R. S. EDDY.