

J. W. Case,

Water Wheel.

No. 110,009.

Patented Dec. 13, 1870.

Fig: 1.

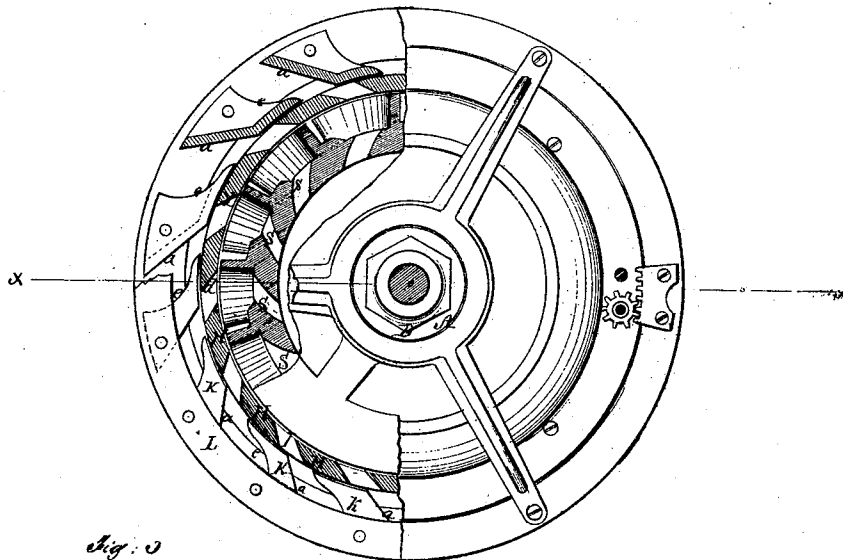
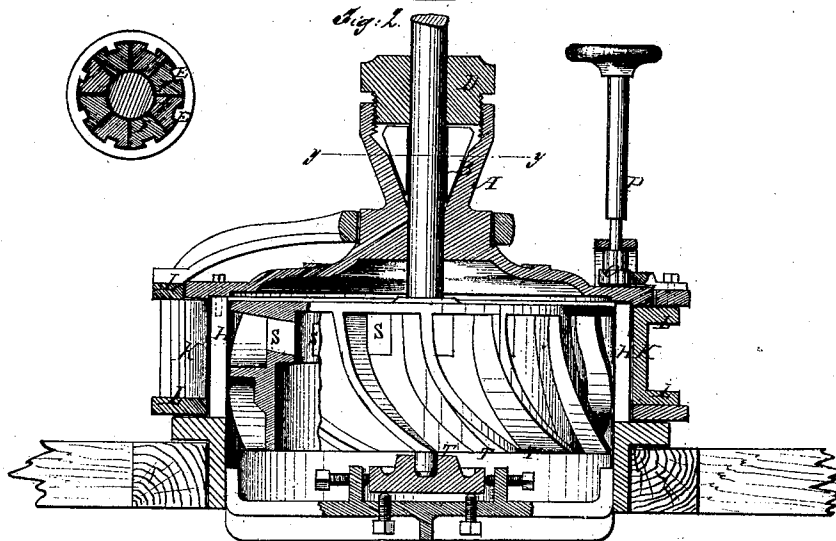


Fig: 3



Fig: 1.



Witnesses:

Witnesses:
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Inventor:

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United States Patent Office.

DANIEL W. CASE, OF GARDEN CITY, MINNESOTA.

Letters Patent No. 110,009, dated December 13, 1870.

IMPROVEMENT IN WATER-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DANIEL W. CASE, of Garden City, in the county of Blue Earth and State of Minnesota, have invented a new and useful Improvement in Water Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in water-wheels; and consists in the construction and arrangement of the bearing for the shaft and adjusting apparatus therefor in the top of the case of the wheel.

Also, in certain improvements in the construction and arrangement of the chutes leading the water to the wheel and the gates therefor, and also in an arrangement for discharging the water from the wheel partly through central and partly through vertical discharges.

Figure 1 is a top view, partly in plan and partly in horizontal section, of my improved wheel;

Figure 2 is a vertical transverse section, taken on the line $x x$ of fig. 1; and

Figure 3 is a horizontal section on the line $y y$ of fig. 2.

Similar letters of reference indicate corresponding parts.

I make an enlargement of the hole for the shaft through the top of the case in a projection, A, rising above the top of the case, as shown at B, the said enlargement being in the form of an inverted cone, with a cylindrical prolongation, C, the wall of which is screw-threaded, for the reception of a tightening-plug, D, the said plug having a central hole for the shaft.

The conical-shaped wall of this enlargement B of the hole is provided with the ribs E.

In this enlargement I fit the wood-bearings F, which are made by first turning up, in a lathe on a mandrel the same size as that of the shaft, a conical block, preferably of wood, to the same size and shape as the conical space, then sawing off the small end, making the block smaller than the conical space, so that it may be forced down from time to time, and splitting the block longitudinally into four, six, or eight parts, as shown in fig. 3.

These blocks, thus formed and provided with grooves in the back of the ribs E, are put into the space, and

the plug D screwed down upon them, as shown, to tighten them up against the shaft. This makes a very secure and reliable bearing, which will always center the shaft when forced down by the nut, which may be done from time to time, as required for tightening.

The chutes are formed by means of the permanent rim H, arranged outside the wheel, and having the vertical tangential or nearly tangential slots I and the blocks K attached to the rims L and moving back and forth with the said rims, to cause the spaces M between the blocks to coincide with the slots I when the passages are open, or to be cut off by the parts of the rim H between the said slots when the passages are closed.

The walls d of the block K are so shaped that when the passages are wholly opened for the water they will form a prolongation of the walls d of the slots I, and thus the two constitute a smooth plane and continuous chute or wall thereof, for guiding the water to the periphery of the wheel.

The walls e of the blocks K are concaved behind the points, to make ample space for the water to flow into the buckets as unobstructedly as possible.

The rims L are turned by the pinion O and hand-shaft P in a way common to other wheels.

In order to be able to provide buckets of considerable height, with but little breadth radially, to throw the force of the water as near the periphery as possible, and yet have sufficient discharge capacity, I propose making the passages S through the cylinder of the wheel to the central space under the top plate, for discharging a part of the water thereat. The buckets have, therefore, two discharge-places, the other being at the bottom, as indicated at T.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

1. The arrangement of the buckets with the central discharges S and the vertical discharge T, all substantially as specified.

2. The wheel-shaft, the extension A of the wheel-case, the inverted conical seat or cavity B, and the blocks F and screw-plug D, all arranged substantially as specified.

DANIEL W. CASE.

Witnesses:

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