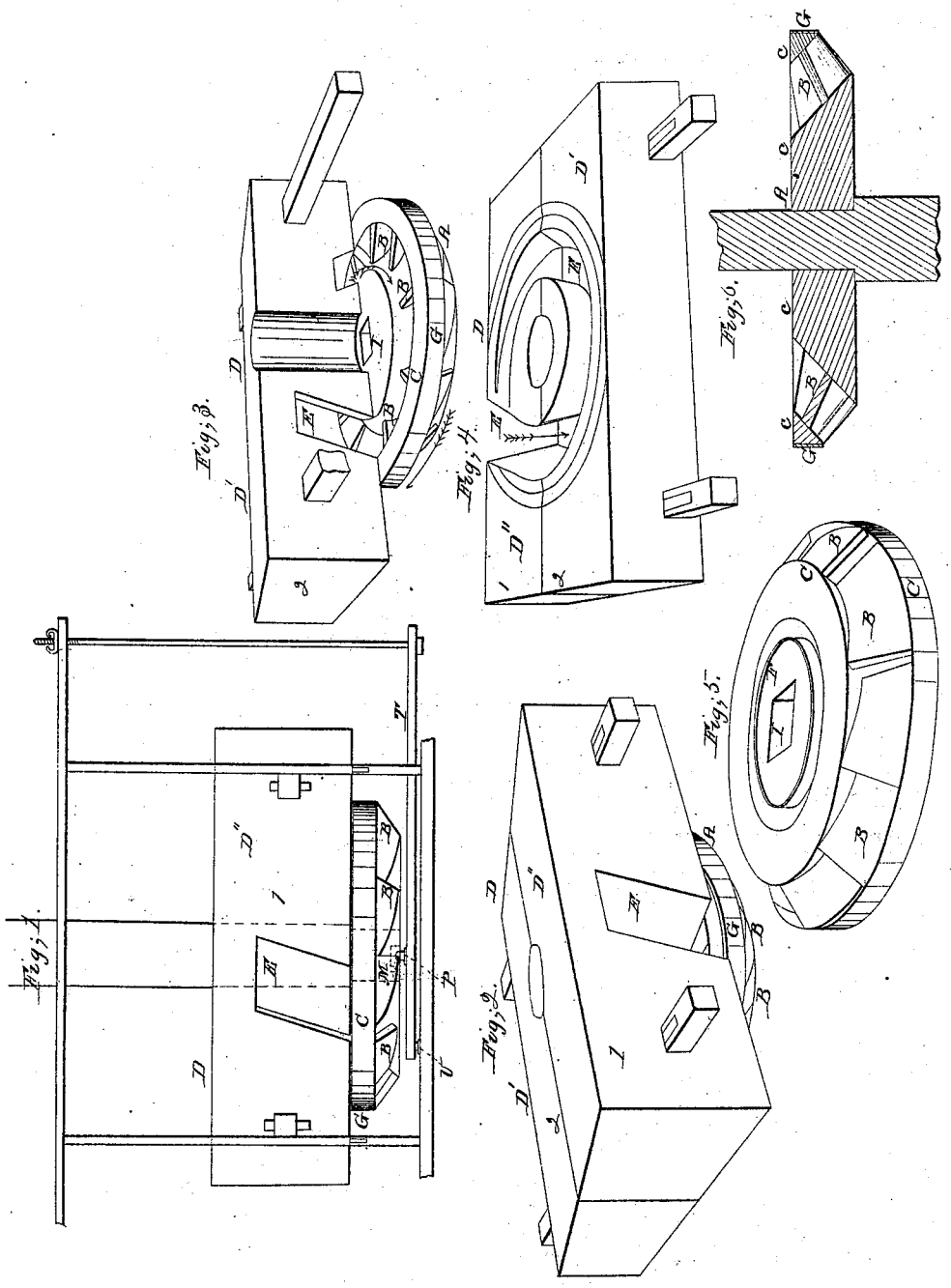
E. Parker,

Water Wheel,

No. 5,201. Patented July 24, 1847.



UNITED STATES PATENT OFFICE.

EMANUEL PARKER, OF CAMDEN, SOUTH CAROLINA.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **5,201**, dated July 24, 1847.

To all whom it may concern:

Be it known that I, EMANUEL PARKER, of the town of Camden, in the district of Kershaw and State of South Carolina, have invented a new and useful Improvement in Water-Wheels for Propelling Grist and Saw Mills and other Machinery, and in a Cap Combined with the Wheel for Applying the Water Thereto, which improvement is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a side elevation of the wheel-shaft, bridge-tree, and part of the frame-work of the mill. Fig. 2 is a perspective view of the two blocks of wood in which the tapered water-way is formed, combined, and keyed together, and of the wheel placed below the same. Fig. 3 is a perspective view showing a section of the block and the wheel combined, the larger section of the block being removed. Fig. 4 is a view of the block turned bottom upward in order to show the tapered water-way therein. Fig. 5 is a perspective view of the wheel turned bottom upward. Fig. 6 is a vertical section of the wheel.

The nature of my invention consists in a peculiar and novel mode of constructing a wheel A from a single circular block of wood, having buckets B and rims C formed in the block of such curvature as to produce the greatest effect with the least quantity of water used, and in combining therewith a cap D, in which a circular tapered water-way E is formed for introducing the required quantity of water to the buckets, and at the same time preventing the main body of the water in the cylinder from pressing upon the wheel, said cap being composed of two blocks of wood D′ D″, doweled and keyed together and arranged above the wheel in such manner that the wheel shall revolve without touching it, and that a section of it may be removed with facility, in order to remove any obstruction that may get into the wheel or for any other purpose.

The wheel may be got out of one piece of timber. If it be got out of several pieces, they must first be secured well together by dowels, pins, keys, or other suitable means. After putting the timbers together for the wheel, then strike the concentric circles for the buckets eight inches apart, leaving a margin of four inches next the periphery of the wheel. From the outer circle start a bevel of about ten degrees, and from the inner one of forty-five degrees, bringing the bevels together, so as to leave the face of the buckets seven inches. Then lay off the circle of buckets, eight or ten in number, more or less, allowing two inches for the lap of the buckets. A bevel-gage is used to indicate the slope of the buckets, commencing at four inches from the edge, and sloping or beveling to the bottom until a face of seven inches is obtained, which will be, when finished, at an angle of forty-five degrees. Next turn over the wheel and make a bevel at bottom with the edge next the center square, so as to receive a band F to give strength to the wheel and withstand the strain of wedging it on the shaft. Now put on the bands, the big band G round the wheel and the little band round the last-described circle, the big band to be four inches wide and the small one to be one and one-half or two inches wide.

The excavation for the buckets I will now describe. Begin in the angle of ten degrees, working out at the edge and bottom at an angle of forty-five degrees, having an equal and regular twist of the buckets all the way round to the ends thereof, leaving a space or opening between the buckets of two or three inches, as may be wished, having in view the quantity of water to be used. As this is the place for its escapement, calculate the capacity of the buckets to receive and let off the water, one-fourth more of water to be applied to the cap than the buckets can readily carry off. Next lay off the mortise I for the shaft.

I will describe a grist-mill as it differs from a saw-mill. On the top or face side make the mortise three-fourths of an inch smaller than the bottom to admit of wedging. Insert the shaft. In the center of the end of the shaft fix the ink M and in the bridge-tree fix the pivot P with the point perpendicularly up and out or clear of the bridge-tree about two inches. The bridge-tree T should be six inches thick, eight or ten inches wide at one end, tapering to five or six at the other. On the wide end I have a small axle U with rests under each end, but near the sheeting, so as not to lose fall. About fifteen inches from the axle end place the pivot. To the small end attach a rod or stem S to raise or lower the end of the bridge-tree.

The cap D is made in the following manner:

The timber should be five and one-half or six feet long. That next the breast through which the water enters will be No. 1 and the other No. 2. No. 1 must be two feet wide, twenty or twenty-two inches thick at the edge next the breast, and sixteen inches at the other. No. 2 must be sixteen inches at the edge next No. 1 on the shaft and twelve at the other, with a four-inch mortise near each end for the keys. After keying together lay off the water-flue E by the circle of the buckets in the wheels and where it enters No. 1, making it eighteen inches deep and at an angle of twenty degrees or thereabout, pitching down and outward, maintaining the same angle all round, and where it enters No. 2 it will be thirteen and one-half inches deep and where it enters No. 1 again it will be four and one-half inches deep, and go out at nothing, as near where it started as possible, so as not to be cut into it. Should the machine be large and heavy, you may let the flue in deeper and diminish in proportion.

The cap is supported upon horizontal rests let into vertical posts by mortises and tenons in such manner that they can be let down or raised as required. The cap should be adjusted so as not to touch the wheel, but make close joint to prevent great loss of water and to allow the wheel to turn freely. The shaft must pass through the cap without touching it and should be brought to a shoulder when it comes against the under side of the wheel. The ink is inserted in the lower end of the shaft. The pivot on which the ink turns is fixed on the bridge-tree. The short end of the bridge-tree turns on a small axle under the wheel during the operation of raising and letting down the wheel. The long end of the bridge is raised or lowered by a vertical stem or screw-rod, as above stated. The pivot can thus be taken out and inserted without tearing the mill to pieces.

The cap may be confined down near the face of the wheel in various ways. For instance, the piece of the cap next where the water enters at No. 1 is made fast to the rests on which it lies. The other piece, No. 2, after being keyed at No. 1, is held down by a small brace, so that it may be removed without much trouble. The small piece D′ of the cap should always be made movable, so that if anything should get into the wheel it may be taken off and put back again in a few minutes, or should anything require repairing by taking off that piece the wheel may be removed without difficulty.

What I claim as my invention, and desire to secure by Letters Patent, is—

Combining a wheel having buckets made in the particular manner described, with a circular tapered water way or flue, made in the particular manner described, inclining toward the periphery of the wheel for the purpose of introducing the water to the buckets at the required angle and quantity and preventing the main body of the water resting upon the wheel, the core being formed like the frustum of the cone, and the inner side of the rim sloped or inclined outwardly at the same angle as the sloped side of the core, the periphery of said rim being vertical and the top horizontal and the buckets between them, the sections of a screw, whose upper ends are made to incline inward on radial lines toward the core at an angle of about ten degrees, the water way or flue forming a segment of a circle, gradually lessening in depth from the place of entrance to where the end of the circle nearly intersects the place of beginning, the said flue inclining outward from a perpendicular line about twenty degrees, so as to pitch the water against the buckets at that angle, as above described and set forth, causing every bucket of the circle to be acted on simultaneously, the water escaping therefrom in a contrary direction to that at which the water enters, by which the pressure of the ink upon the pivot, which causes its rapid destruction, is removed, by which the mill is rendered more durable, as herein set forth.

EMANUEL PARKER.

Witnesses:
A. G. BASKIN,
MOREAU NAUDIN.