

O. Bryant.
No. 119,567.

Water Wheel.

Patented Oct. 3, 1871.

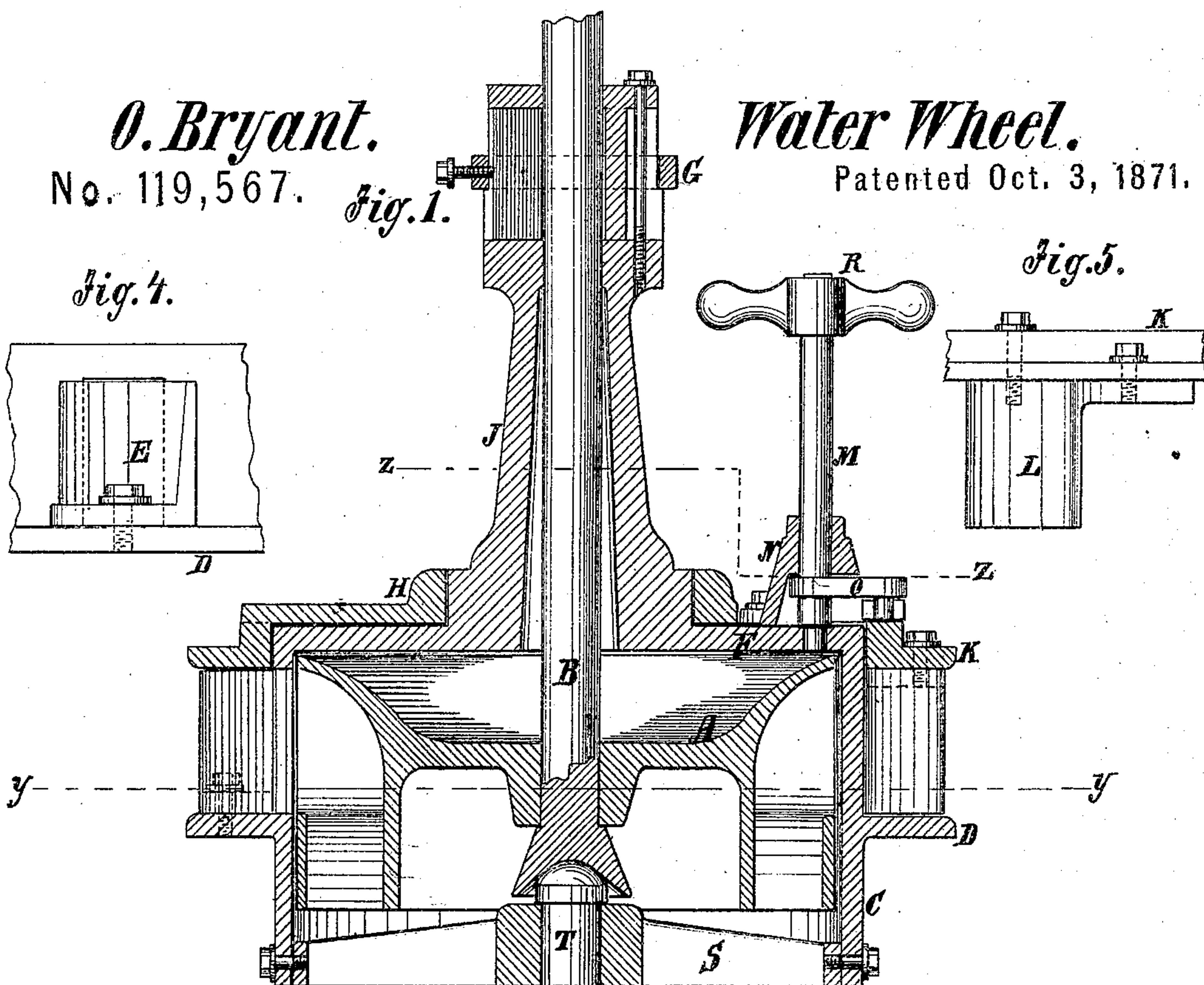


Fig. 3.

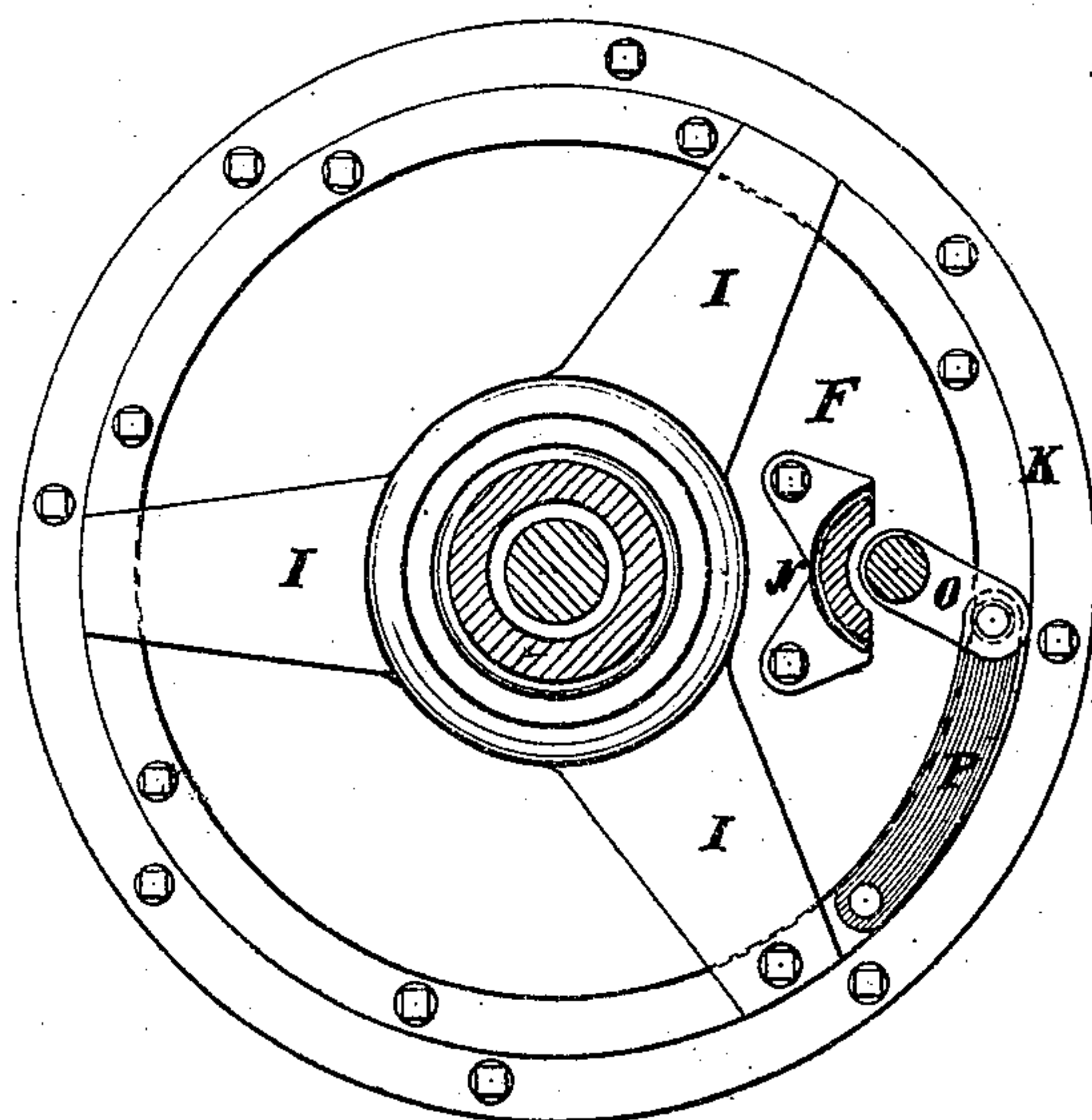
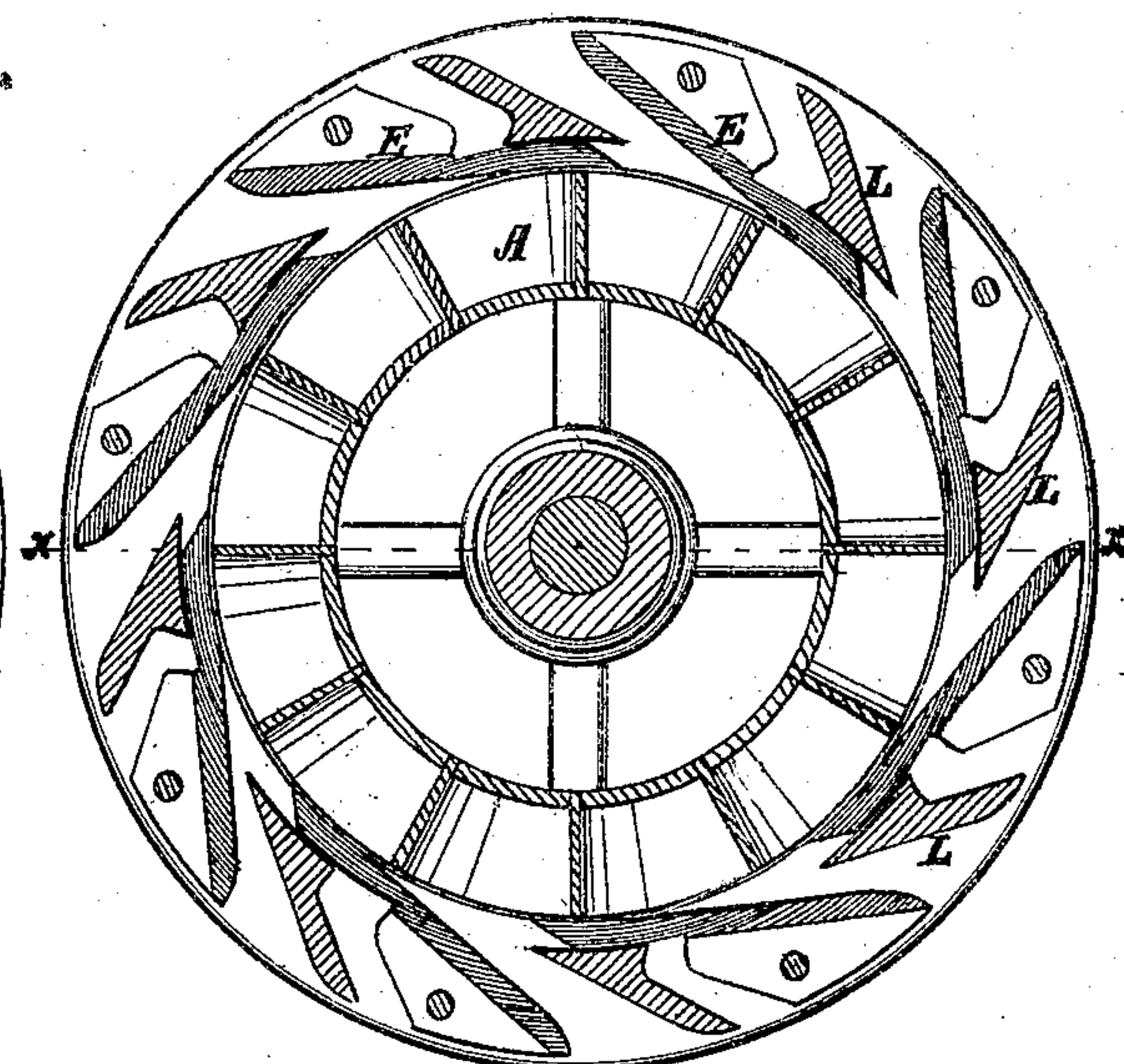


Fig. 2.



Witnesses:
A. Berneisen
Wm. H. C. Smith.

Inventor:
O. Bryant.

PER

Wm. H. C. Smith
Attorneys.

UNITED STATES PATENT OFFICE.

ORRIN BRYANT, OF CHESTERFIELD, MASSACHUSETTS.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 119,567, dated October 3, 1871.

To all whom it may concern:

Be it known that I, ORRIN BRYANT, of Chesterfield, in the county of Hampshire and State of Massachusetts, 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 a new and useful improvement in water-wheels, having special reference to the mode of discharging the water to the wheel and controlling its flow; and it consists in a series of movable chutes operating in connection with stationary chutes, with the mechanism by which the discharge-apertures are opened and closed, as hereinafter more fully described.

In the accompanying drawing, Figure 1 represents a vertical section of the wheel taken on the line *x x* of Fig. 2. Fig. 2 is a horizontal section taken on the line *y y* of Fig. 1. Fig. 3 is a section taken on the line *z z* of Fig. 1. Fig. 4 is a sectional front view, showing the stationary chute. Fig. 5 is a sectional front view, showing the movable chute.

Similar letters of reference indicate corresponding parts.

A is the water-wheel on the vertical shaft B, operating on the turbine principle within the stationary shell or casing C. D is a flange projecting from the shell or casing of the wheel. E are the stationary chutes, bolted to the upper side of this flange D, as seen in Fig. 2. The faces of these chutes are vertical, and stand so as to conduct the water onto the buckets of the wheel at a right angle, thus securing its greatest possible effect upon the wheel. The water drops from the wheel by its own gravity in the ordinary manner. F is the top of the water-wheel casing, which extends upward as a tubular column and supports the adjustable boxing and bearing of the shaft, as seen at G. H is a spider, of three (more or less) arms, I, the center or hub of which is fitted to the tube or column J of the cap F, so that it will easily turn thereon. K is a rim attached to the ends of the spider-arms, to the under side of which the movable chutes L are bolted. This rim K forms the top, as the flange D forms the bottom of the

water-passages to the wheel. By giving the spider and rim a revolving motion on the column J the passages or water-apertures are opened and closed and the water-power controlled. The spider H, with the chutes L, are moved or adjusted, as may be desired, by a mechanism arranged on the stationary cap F, seen in Figs. 1 and 3. M is a vertical spindle, with its lower end in a hole in the cap F, and supported by the stand N, which stand is bolted to the cap. O is an arm rigidly fastened to the spindle M. P is a link-bar, one end of which is jointed to the end of the arm N and the other end to the rim K of the spindle. R is a handle on the spider. When the water-passages are entirely open the arm N will stand on a line radiating from the center of the wheel-shaft. When the arm is turned for diminishing the size of the water-apertures, it will be seen that the power is increased as the end of the link-bar will be carried inward, which increases the leverage, and the action approaches that of the knuckle-joint. S is the bridge-tree or spider, with three (more or less) arms, in the center of which is the step T, on which the shaft B revolves. The wheel is accurately fitted to the shell or casing, and the chutes are also fitted and arranged with regard to the wheel, so as to save and utilize all the water.

The wheel is arranged to operate in the bottom of the flume, the projecting flange D resting on the flume-floor; the portion of the casing below the flange, of course, hangs below. The spindle extends up so as to be operated on the mill-floor. The movable chutes being balanced or nearly balanced by the pressure of the water, the power required to operate them, when applied to the spindle, is very slight. The friction of the spider on the column J is very little, as the frictional surface is under water and constantly lubricated thereby.

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

The spider H with the rim K, chutes E and L, combined and arranged to operate in connection with a water-wheel, substantially as and for the purposes herein shown and described.

ORRIN BRYANT.

Witnesses:

L. L. TOWER,
MIRA J. TOWER.