

V. M. BAKER.
Water Wheels.

No. 124,471.

Patented March 12, 1872.

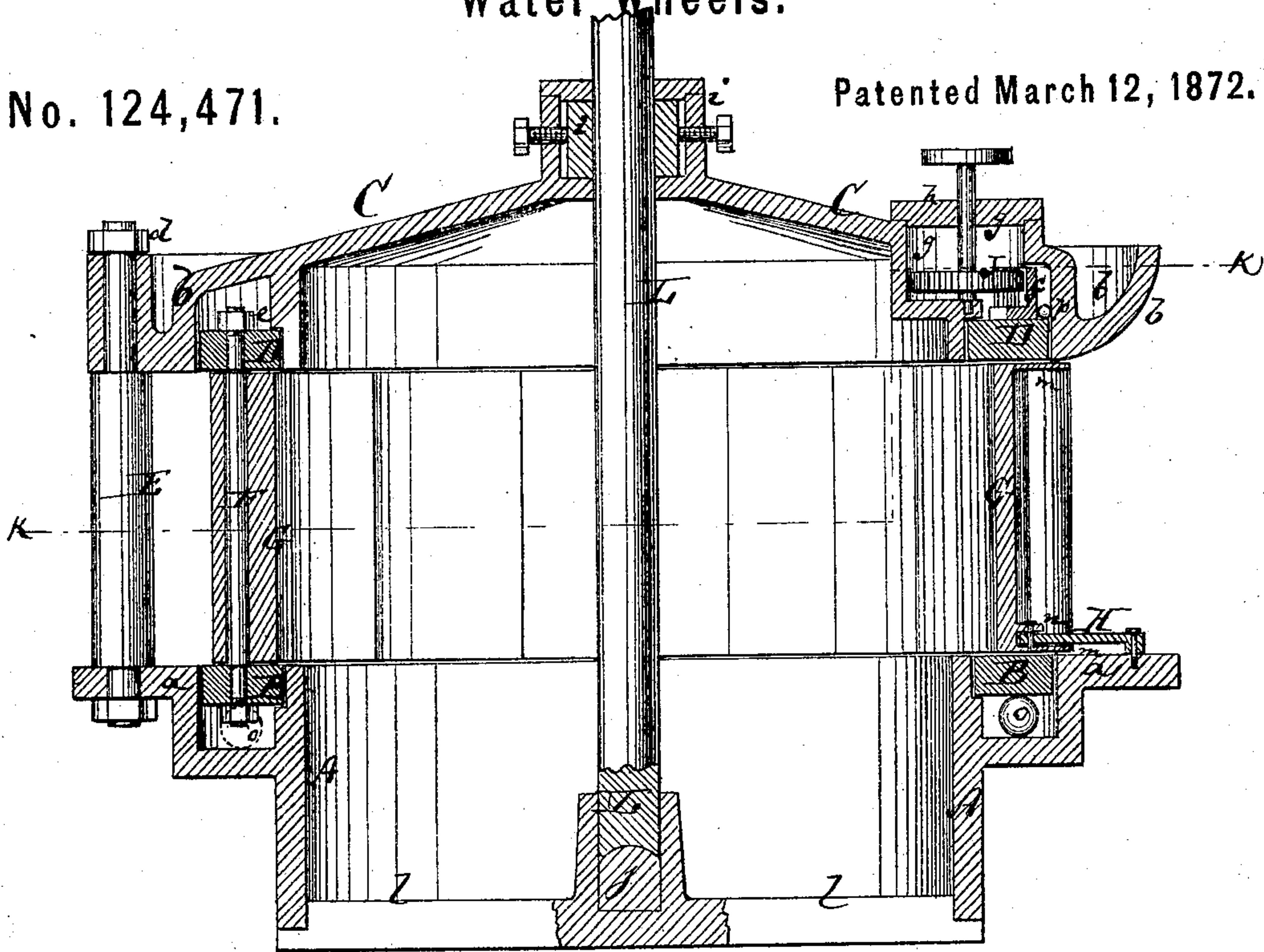
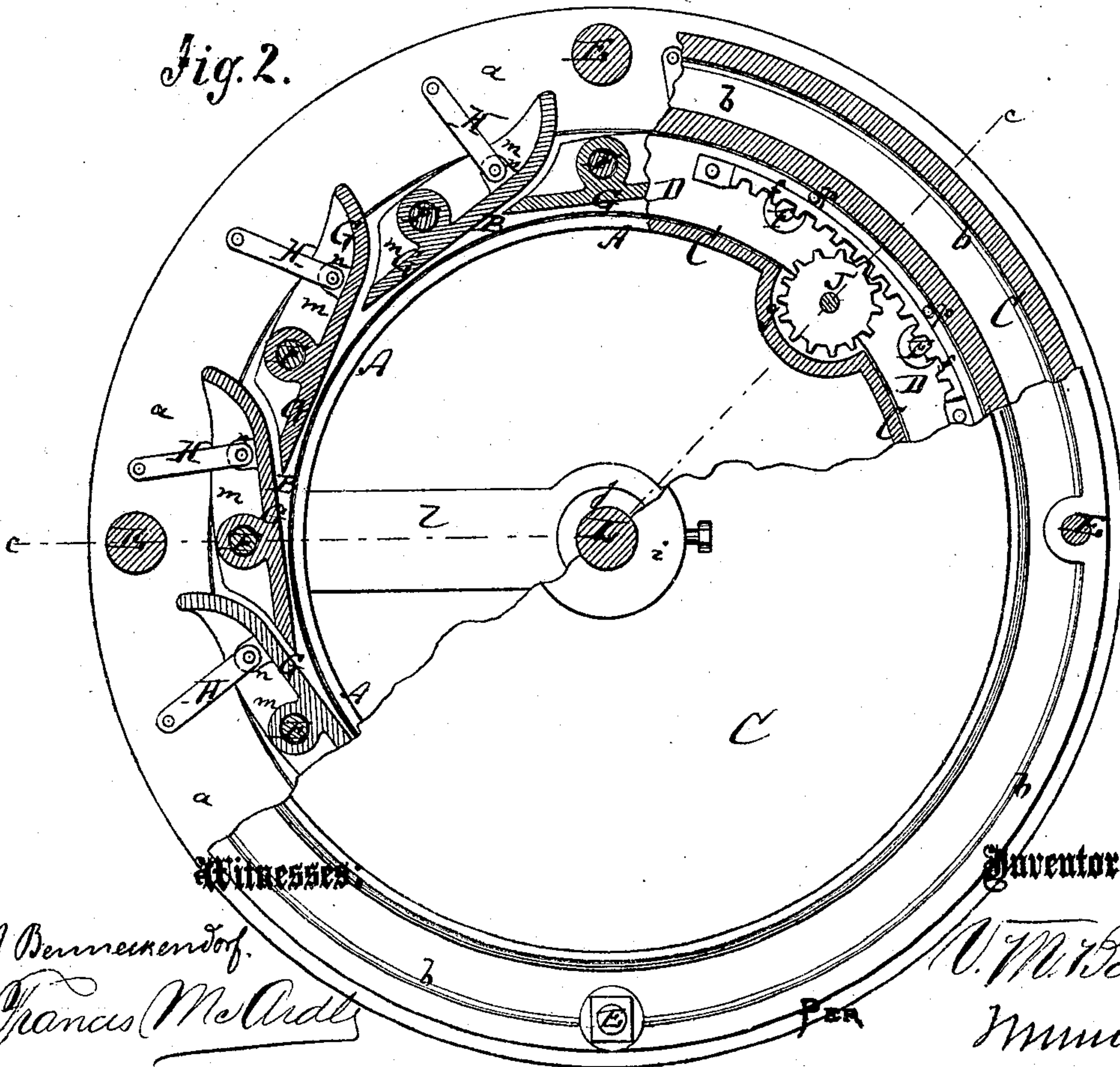


Fig. 2.



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IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 124,471, dated March 12, 1872.

Specification describing a new and Improved Water-Wheel, invented by VINCENT M. BAKER, of Preston, in the county of Fillmore and State of Minnesota.

Figure 1 represents a vertical central section of my improved water-wheel, the line *c c*, Fig. 2, indicating the plane of section. Fig. 2 is a top view, partly in section, of the same, taken on the plane of the line *K K*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to an improvement in gates and gate mechanism for water-wheels; and has for its object, by the improved arrangement, to gain larger spaces for water-entrance and avoid unnecessary friction. The invention consists in sinking the gate-rings, in a new form of flanged gates, and mode of connecting them, all as hereinafter more fully described.

A is the stationary cylinder to the wheel-case, having a horizontal flange, *a*, in which there is a groove or recess to receive the lower gate-ring *B*. *C* is a crown-plate of the wheel-case, provided in the under side of its flange *b* with a recess to receive the upper gate-ring *D*. The flange *b* of the crown-plate *C* is curved or beveled to form a flaring water-entrance. *E E* are bolts, that connect the flanges *a b* of the cylinder *A* and crown-plate *C*. *F F* are bolts, that connect the upper and lower gate-rings. Nuts *d d* are applied above the flange *b* to the bolts *E*. *e e* are nuts applied above the ring *D* to the bolt *F*. *J* is the pinion, and *f* the segment, that move the gate-rings, the segment being attached to the upper gate-ring *D*. *g* is a box, made in the crown-plate *C* to receive the pinion *J*. *h* is a cap to the box, fastened by bolts or otherwise. *L* is the water-wheel shaft, its upper part turning in a box, *i*, that is secured in the center of the crown-plate, while its lower end rests in a step, *j*, which is held on a cross-bar, *l*, of the cylinder *A*. *G G* are the gates, made with straight inner faces, beveled inner ends, and curved outer ends, as is clearly shown in Fig. 2, and with flanges *m m* at top and bottom. To an ear, *n*, or to the lower flange *m* of each gate, is pivoted the inner end of a lever, *H*, whose outer end is pivoted to the flange *a* of the wheel-

case. The gates *G* are placed between the rings *D D*, and the bolts *F F* pass through them at a point where the pressure will be the greatest on the inner end when closed. By having the flanges *a b* grooved for the reception of the gate-rings, these latter are carried out of the way of the entering water. By providing the crown-plate *C* with the flaring flange *b*, the water-entrance is still more enlarged and friction reduced. The gates *G G*, being made with upper and lower flanges, will, by means of said flanges, cover the joints between the case and ring. The levers *H* attached to the heels of the gate serve as guides for said gates, while the bolts *F* are pivots for the same in such manner that the greatest pressure of water shall be on the inner end of the gate. This causes it to open and close more easily than it would if the pivots were placed in the center. The greatest pressure of water being on the inner ends of the gates when closed, helps to open them, and the draught of water around the wheel when they are open helps to close them.

Balls *o o* may be placed in the recess of *a* for the lower gate-ring to rest on, by which the gates move more easily. Two balls, *p*, may be placed back of the segment *f* to remove the friction by hoisting.

The gate *G*, when made with straight inner face, beveled inner end, curved outer end, and with a flange at top and bottom, is superior to other gates. On the straight inner face the water is conducted to the wheel in a straight line; hence less friction than there would be if said face was curved. Leakage is prevented by the flanges covering the joints between the rings and case when the gates are closed.

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

1. The gates *G*, provided with the upper and lower horizontal flanges *m m*, as shown and described, for the purpose specified.

2. The rings *B D*, gates *G*, pivot-bolts *F*, and levers *H*, pivoted to the base-flange *a* and the gates, as shown and described.

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