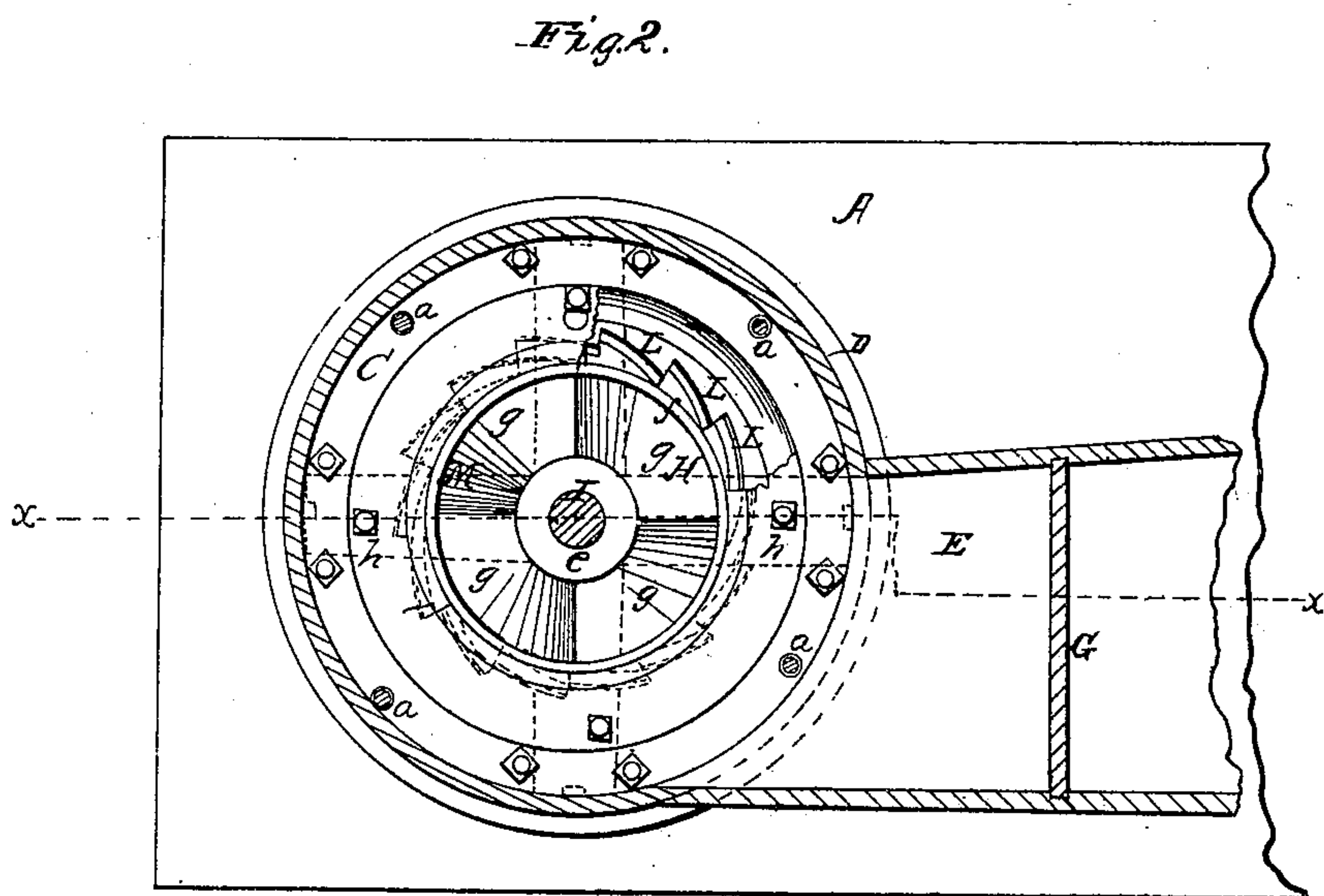
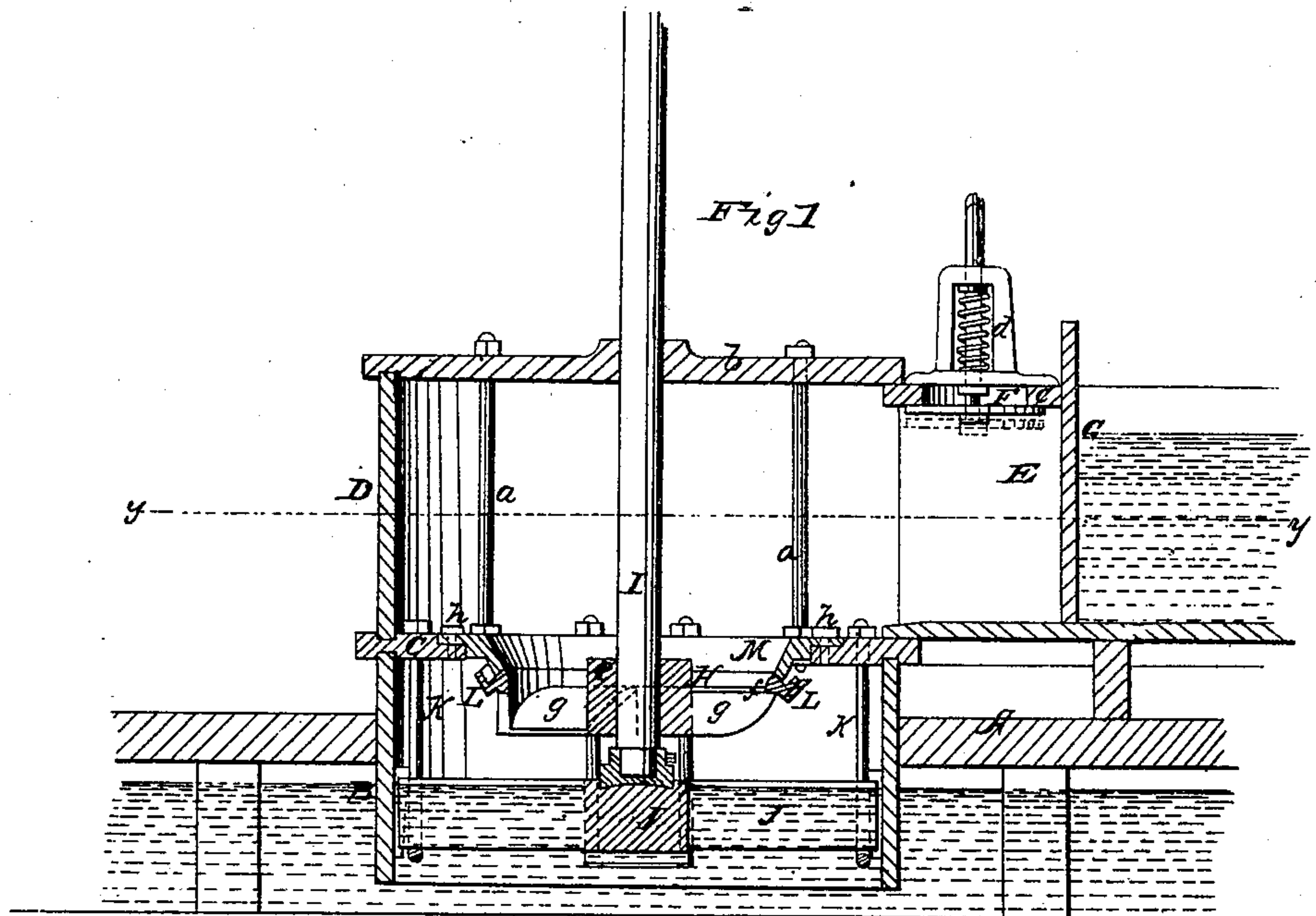


J. W. TRUAX
WATER WHEEL.

No. 29,333.

Patented July 24, 1860.



Witnesses
J. W. Coombs
R. S. Spence

Inventor.
J. W. Truax
For my attorney

UNITED STATES PATENT OFFICE.

JACOB W. TRUAX, OF RICHFORD, VERMONT.

WATER-WHEEL.

Specification of Letters Patent No. 29,333, dated July 24, 1860.

To all whom it may concern:

Be it known that I, JACOB W. TRUAX, of Richford, in the county of Franklin and State of Vermont, have invented a new and

5 Improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

10 Figure 1 is a vertical section of my invention taken in the line *x, x*, Fig. 2; Fig. 2 a horizontal section of the same taken in the line *y, y*, Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

15 This invention relates to certain improvements in that class of water wheels which are placed in a vertical shaft, are actuated by the reactive force of the water, and have a draft tube attached.

20 The object of the invention is to economize in the use of water by appropriating or applying the leakage water to the wheel so as to make it subservient in driving the same, and obviating the friction hitherto produced by water-tight packing or joints.

25 The invention also has for its object the arranging of the wheel with its concomitant parts in such a manner that the wheel and all parts pertaining thereto are rendered very accessible for the purpose of repairs.

30 The invention has further for its object the proper discharging of the water from the wheel after the closing of the gate, so that the wheel and penstock will be free from water when not in operation.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

40 A, represents a horizontal foundation or bed piece in which a draft tube B, is fitted, said tube being of cylindrical form and of any proper diameter according to the size of the wheel.

45 C, is an annular flanch or plate which is placed on the top of the draft tube, and D, is a penstock which is placed on the flanch or plate C, and is secured thereto by screw bolts *a*, which pass through the plate or flanch C, and through the cover *b*, of the penstock. The lower end of the penstock D, is "let in" the flanch or plate C, to insure a firm and water tight connection. The penstock D, is of the same diameter as the draft

55 tube B, as shown clearly in Fig. 1.

E, is a water induction passage which communicates with the penstock D, is closed at the top by a cover *c*, which is provided with a valve F, and has a gate G, at its outer end. The gate G, may be an ordinary vertically sliding gate and the valve F, may be an ordinary puppet valve having a spring *d*, on its stem to keep it closed when not otherwise acted upon, the valve opening downward as will be seen by referring to Fig. 1. 60

H, represents the wheel, the shaft I, of which has its upper bearing at the center of the cover *c*, the lower end of the shaft being stepped at the junction of two bars J, J, which cross each other at right angles and are suspended by stirrups K, from the flanch or plate C, as shown clearly in Fig. 1. 70

The wheel H, is composed of a hub *e*, which is connected with a rim *f*, by buckets *g*, said buckets being of spiral form so as to be acted upon by the reactive force of the water. The upper edge of the rim *f* is inclined at an angle of about 45° as shown clearly in Fig. 1. To the lower edge of this rim there are attached auxiliary buckets L. These buckets are simply plates or projections of suitable length inclined longitudinally and projecting at right angles from the rim *f*. 80

85 On the annular plate or flanch C, there is secured by bolts *h*, a conical rim M. This rim is bolted water-tight to the plate or flanch C, and it extends down to the rim *f*, of the wheel H, nearly touching the wheel. The lower edge or face of the rim M, is parallel with the face of the rim *f*, and the space between the two is directly over the buckets L, as shown in Fig. 1. 90

The operation is as follows: When the gate G, is raised the water passes into the penstock D, and acts upon the wheel passing down upon the buckets *g*, and into the draft tube B, the lower end of which is of course submerged as usual. The water that leaks through between the rims M, *f*, acts upon the buckets L, and is made subservient in driving the wheel. By this arrangement much friction is obviated as the rims M, *f*, do not require to be brought in close contact in order to form a water-tight joint as hitherto. 100

By the employment or use of the valve F, the water in the penstock D, is made to leave the penstock entirely when the gate G, is 110

closed, the vacuum which would otherwise be produced in the penstock on the water leaving it being obviated, by the opening of the valve by the external pressure of the atmosphere.

It will be seen that by removing the nuts of the screw bolts *a*, that the wheel may be readily withdrawn from the penstock and all the parts both of the wheel and parts pertaining thereto rendered very accessible.

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

1. The auxiliary buckets *L*, on the inclined rim *f*, in connection with the conical rim *A*, attached to the flanch *C*, the parts

being arranged relatively with each other to operate as and for the purpose set forth.

2. The employment or use, in connection with a draft tube *B*, of a valve *F*, placed in such relation with the penstock to operate as and for the purpose set forth.

3. The arrangement of the penstock *D*, flanch *C*, draft tube *B*, and cross bars or bridge trees *J*, as shown and described, to render the wheel and parts pertaining thereto very accessible for repairs.

JACOB W. TRUAX.

Witnesses:

HENRY M. SAFFORD,
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