

# J. O. Joyce. Water-Wheel.

N<sup>o</sup> 75765

Patented Mar. 24, 1868

Fig: 1.

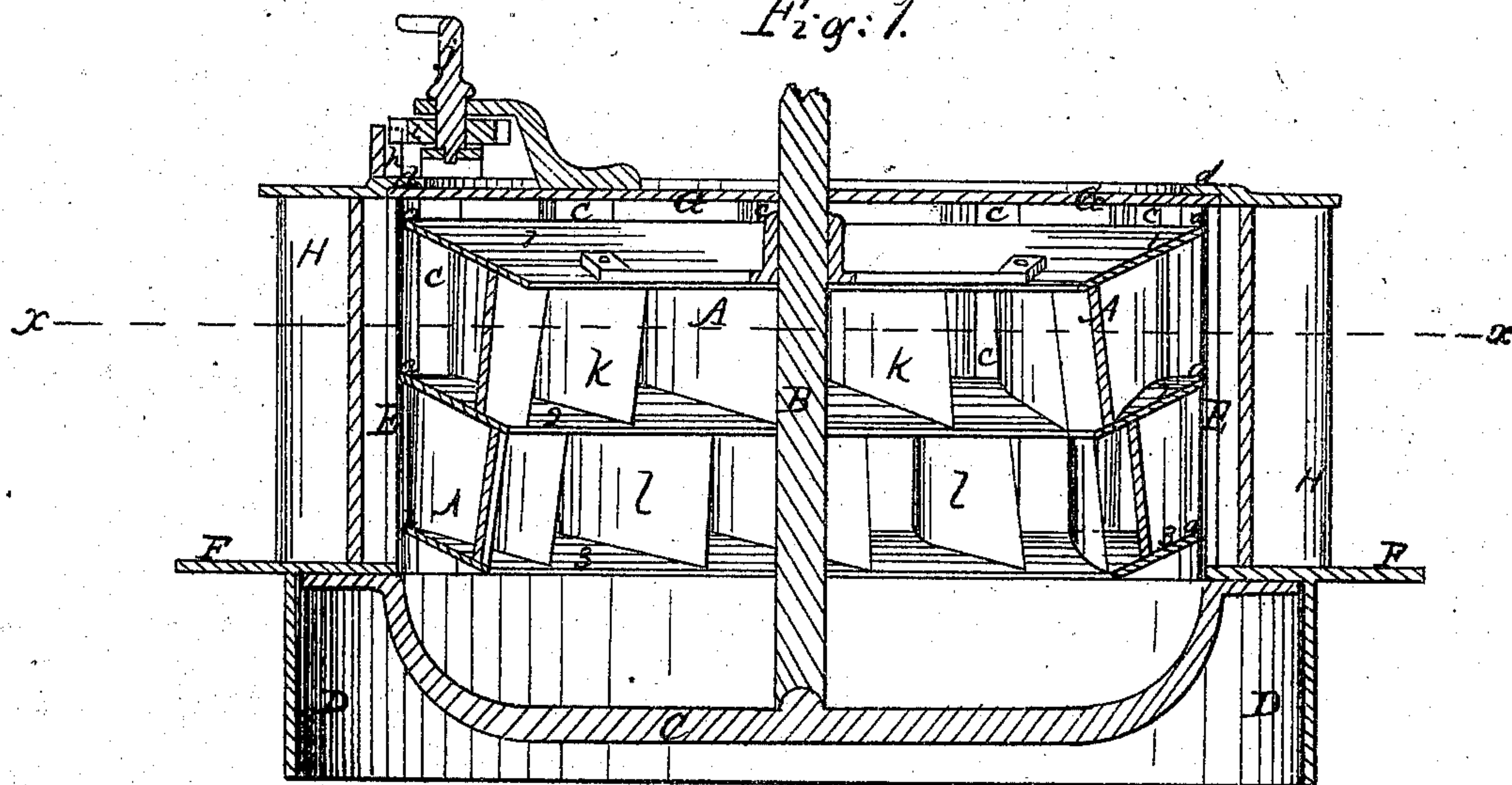
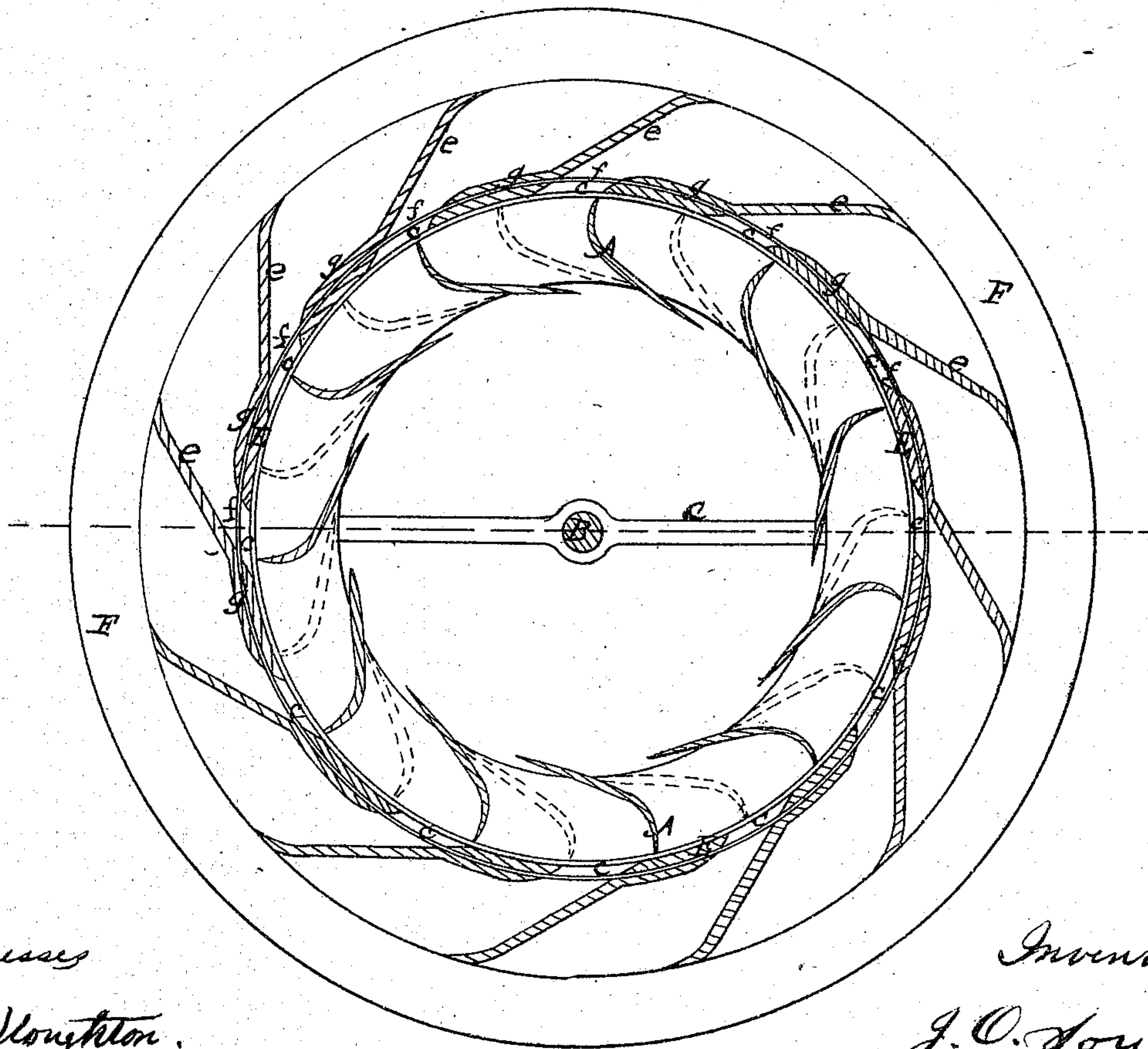


Fig: 2.



Witnesses

A. B. Sloughton.  
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Inventor

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# United States Patent Office.

JACOB O. JOYCE, OF DAYTON, OHIO.

*Letters Patent No. 75,765, dated March 24, 1868.*

## 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, JACOB O. JOYCE, of Dayton, in the county of Montgomery, and State of Ohio, have invented certain new and useful Improvements in Water-Wheels; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical section through the wheel, case, and regulating-chute cylinder.

Figure 2 represents a horizontal section through the same, taken at the red line *x x* of fig. 1.

Similar letters of reference, where they occur in the separate figures, denote like parts of the wheel in both of the drawings.

I am aware that many ways have been devised for directing and regulating the inflow of water to a water-wheel. Of course I make no claim to this in any broad sense, but believe that I have invented a plan of so directing, introducing, and regulating the quantity of water let on to a water-wheel, that is cheaper and better than any other plan known to me.

In addition to the plan of regulating and directing the inflow of water, I have devised a plan of relieving the escape or discharge of the water from the wheel after it has expended its force upon it, and this, too, without interfering with the fitting up of the wheel in a lathe, which cheapens its construction, and causes the parts to move with more accuracy, as the joints are thus more truly made.

My invention consists in the use of a stationary case, furnished with a series of openings, and interposed between the adjustable or turning-gates or chute-case, and the wheel proper, for the purpose of directing or regulating the inflow of water upon the wheel, in combination with the constructing of the wheel proper of a cylindrical form and with a perpendicular exterior, for readily turning it off in a lathe, and with a hollow conical interior for the better or more free discharge of the water after it has been expended upon the wheel.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

The wheel A is of the double turbine centre-vent kind, and secured to its shaft B in any of the usual well-known ways, and the shaft supported in a bridge-tree, C, as is common in such wheels. The exterior, *a*, of the wheel A is cylindrical, so that it may be readily turned off in a lathe. The interior of the wheel is conical, and the top, bottom, and central rims or rings 1, 2, 3, are parallel, or nearly so, and are inclined in a downward direction from the exterior towards the interior of the wheel, as clearly shown in fig. 1. The object of the conical form of the interior of the wheel is to enlarge the discharge-space or vent from the top to or towards the bottom, and allow the water to freely escape after it has left the buckets. Below the wheel is placed the usual suction or draught-cylinder D, which is a part of the register-case E, as said cylinder-case and flange F, as well as the head or top-plate G, I prefer to cast in one piece, and to turn off and fit up at one time in a lathe. The rim of the wheel A runs close to the interior of the vertical portion of the case E, and quite close to the under side of the head or top plate G, which is a close plate, having no free openings. The shaft B of course passes through this head or top plate, but is packed. The cylindrical portion E of the case is furnished with a series of openings *c c c*, which are as long as the wheel is high, and through which the water passes to reach the buckets of the wheel. Around the exterior of the stationary case E, and resting in whole or in part upon the flange F thereof, or partially on the flange and partially by the projection *d*, extending over on to the top plate G, the chute or gate-rim or cylinder H is placed. This chute or gate-cylinder has a series of guides *e e* arranged upon it, so as to form a series of chutes *f f*, corresponding to the number and size of openings *c* in the case E, and the dead spaces *g*, between the chutes *f*, are of sufficient height and width to cover the openings *c* when moved over them. The gate or chute-cylinder has upon it a curved rack, *h*, into which a spur-gear, *i*, on the shaft *j* takes, and by turning said shaft or gear the gate or chute-cylinder can be turned to open or close the water-ways *c*, and regulate the inflow at pleasure, or cut it off entirely, as the case may be.

Whether the guides *e* are used or not, the wheel A is made with two tiers of buckets *k l*, so arranged that the upper ones, *k*, will alternate in position with the lower ones, *l*, as shown. By means of this alternate arrangement of the buckets placed in tiers, and the use of the openings *c*, in the case E, extending the entire depth of

