

Holdman & Goodwin,

Water Wheel.

No. 87,673.

Patented Mar. 9. 1869.

Fig. 1

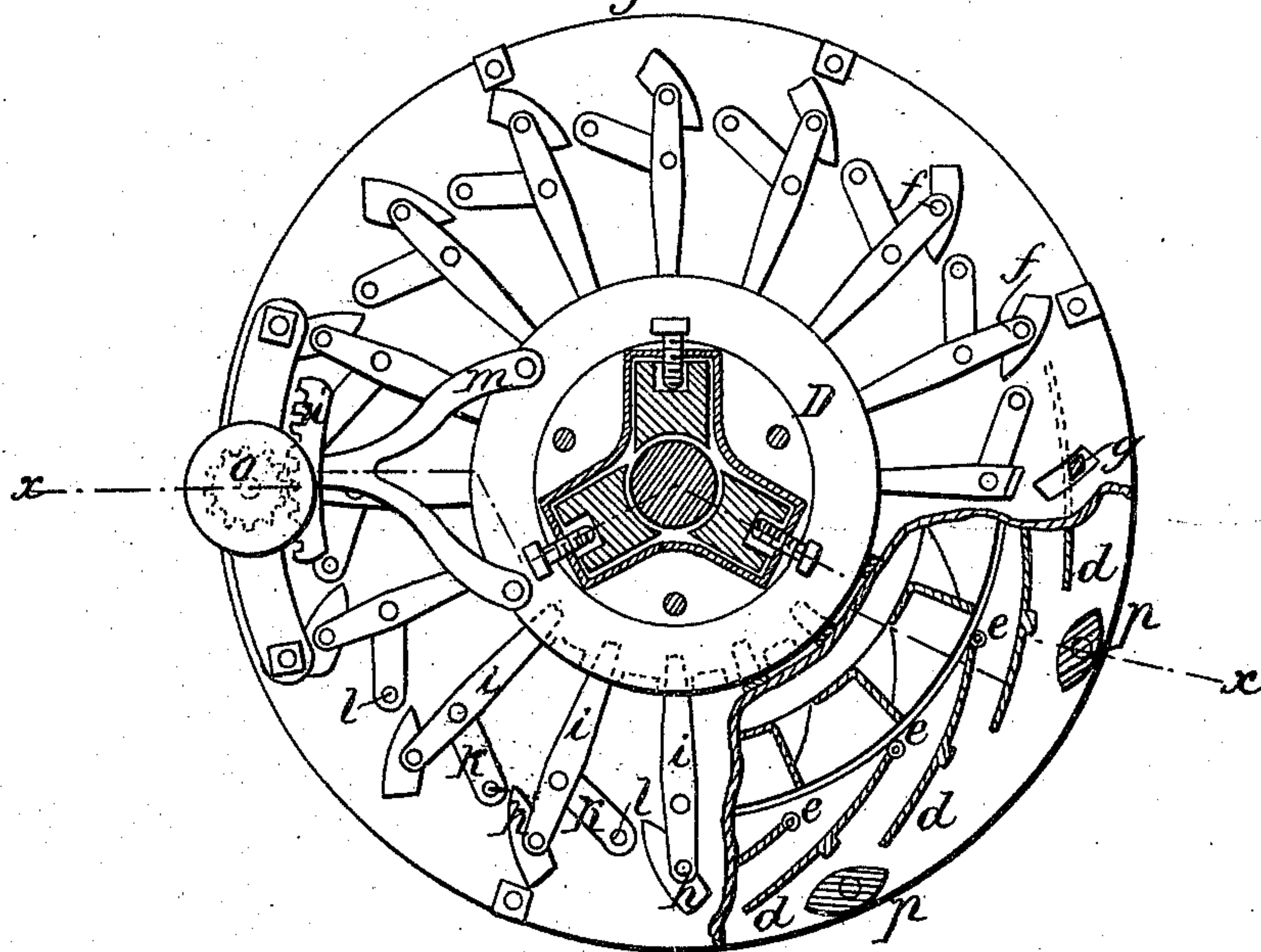
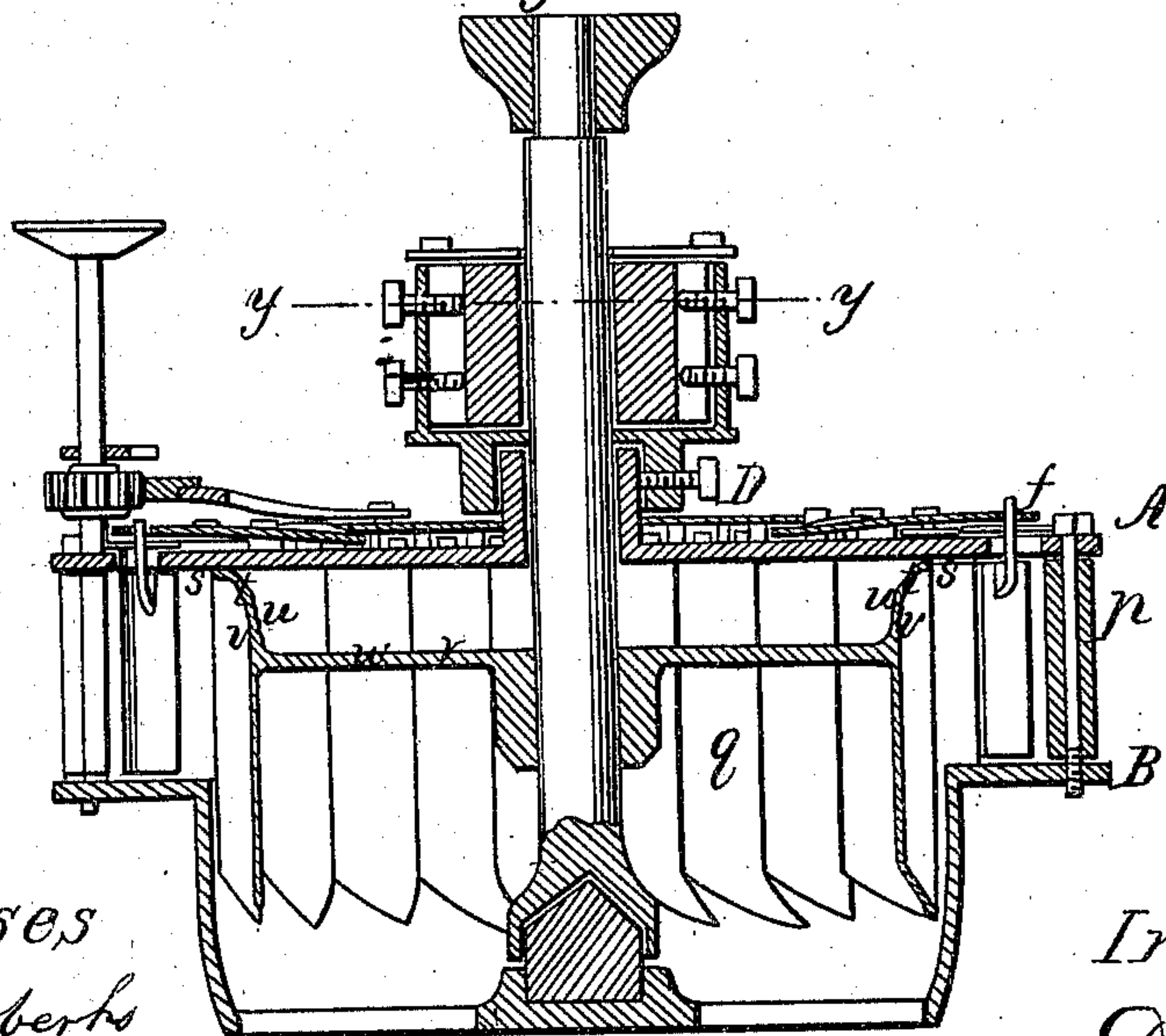


Fig. 2



Witnesses
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D. HOLDIMAN AND S. GOODWIN, OF WATERLOO, IOWA.

Letters Patent No. 87,673, dated March 9, 1869.

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 we, D. HOLDIMAN and S. GOODWIN, of Waterloo, in the county of Black Hawk, and State of Iowa, have invented a new and improved Water-Wheel; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in water-wheels; and

It consists in the construction of the wheel, and in the arrangement of devices for operating the gates.

In the drawings—

Figure 1 represents a plan view of our improved wheel, with a part broken away; and

Figure 2 represents a sectional elevation, the lines *xx*, of fig. 1, showing the planes of section.

Similar letters of reference indicate corresponding parts.

A represents the upper portion of the curb, and

B, the lower portion, from which the discharge-tube C projects in a downward direction, and is contracted at the end, which is designed to stand below the level of the water, whereby an effect of suction may be produced on the wheel.

The parts A and B of the curb are bevelled outwardly, to facilitate the entrance of the water to the gates, or chutes *d*, which are pivoted near their inner ends, at *e*, and lap each other about half their length.

They are provided on their upper edges with the square projections *f*, which rise up through the curved slots *g* in the part A of the curb, and are provided with the sliding plates *h*, for covering the said slots, and are finally connected to the outer ends of the vibrating levers *i*, the inner ends of which rest in notches in the lower face of the loose ring D, arranged on the hub of the part A of the curb.

K represents vibrating arms, connected to the arms *i*, near their outer ends, and to studs *l* in the top of the part A of the curb, which are designed to serve as fulcrum for the arms *i*, on which they may oscillate in the act of moving the studs *f* in the slots *g*.

The arms *i* are placed in nearly a radial position with reference to the ring D, and as it is evident that the ring D would not operate to throw the arms outward while in this position, it is necessary to provide an oscillating fulcrum, to insure an outward movement of the arm, corresponding to the rotary motion of the ring. By arranging the arms *i* radially, they are not crowded together at their points of connection with the ring D, as would be the case if they were arranged tangentially with reference to the ring. By the provision of the oscillating fulcrum *k*, a slight rotary motion of the ring D communicates a direct outward or inward motion to the gates.

m represents a forked arm, which is rigidly secured to the loose ring D, and is provided on its outer end with a segmental rack, *n*, which is actuated by a pinion, *o*, on a vertical shaft connecting with any suitable mechanism for operating it.

When it is turned in one direction, it will open the gates, or chutes, and in the other, will close them, through the medium of the mechanism, as above described.

The parts A and B of the case are connected together by the oval posts *p*, so formed as to present the least amount of resistance to the entrance of the water to the chutes, and provided with screw-bolts and nuts, whereby the said parts are fastened to them.

The wheel consists of a disk, *r*, of suitable metal, having a horizontal surface, *s*, extending from the edge inward a short distance, from thence inclining downward, at an obtuse angle, *t*, to the point *u*, and from thence extending, in a vertical line, *v*, to the horizontal disk *w*, which connects with the hub.

The buckets may be constructed of sheet-metal, and secured by their ends to the outer portion of the plate by bolting them thereto, or they may be soldered to it, or, if preferred, they may be cast together with the said plate.

The discharge-passages, between the buckets, at their inner sides, and at the bottom, are so calculated and arranged, with respect of capacity, with reference to the supply, as to produce the best effects, both of direct action against the bottom of the buckets and reaction at the said discharge-passages.

We are aware that mechanism for operating gates has been used, somewhat similar to ours, in which the arms were arranged tangentially with reference to the operating-ring, and therefore were crowded at their point of connection with the ring. This, however, we do not claim.

We claim as new, and desire to secure by Letters Patent—

1. The arrangement of the ring D, arms *i*, oscillating arms *k*, sliding plates *h*, studs *l*, curved slots *g*, square projections *f*, and gates *d*, operating as described, for the purpose specified.

2. The wheel, constructed as described, of the outer horizontal surface *s*, the angular portion *t*, vertical portion *v*, and the horizontal disk *w*, connected with the hub, the buckets being secured in place at the points *s*, *t*, *u*, and *v*, as herein described, for the purpose specified.

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Witnesses:

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