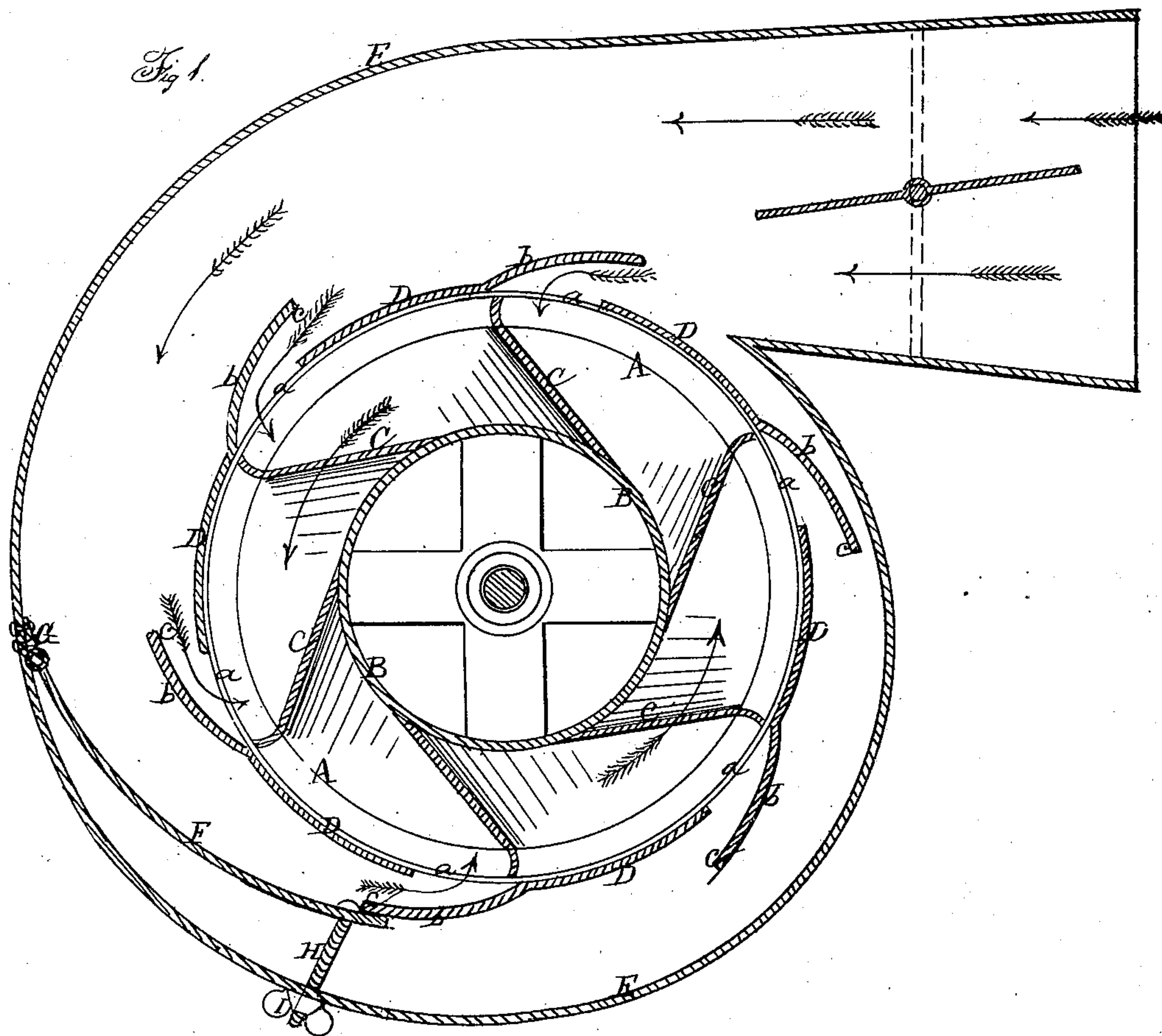


No. 75,298.

PATENTED MAR. 10, 1868.

T. ROSE.  
SCROLL FOR WATER WHEELS.

2 SHEETS--SHEET 1.



Witnesses  
S B Hunter  
W S Hunter

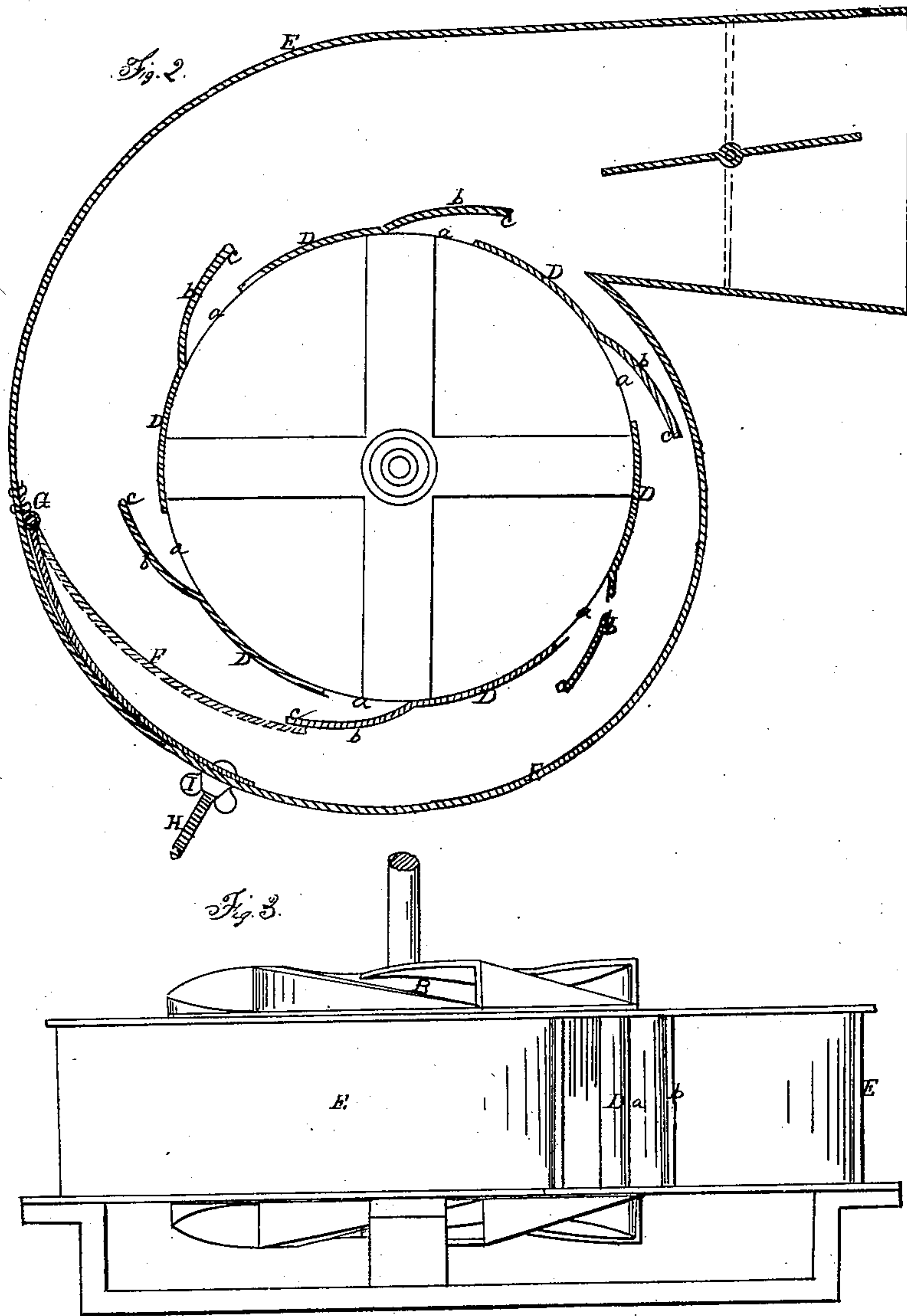
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Witnesses  
S. B. Hunter  
W. S. Hunter

Inventor  
Timothy Rose



# United States Patent Office.

TIMOTHY ROSE, OF CORTLANDVILLE, NEW YORK.

*Letters Patent No. 75,298, dated March 10, 1868.*

## IMPROVEMENT IN SCROLL FOR 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, TIMOTHY ROSE, of Cortlandville, in the county of Cortland, and State of New York, have invented certain new and useful Improvements in Water-Wheel Scrolls; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing of the same, making part of this specification, in which—

Figure 1 represents a horizontal section of a scroll or water-chest and wheel, embracing my improvement.

Figure 2 represents a similar view of the scroll-case with the wheel removed.

Figure 3 represents the scroll-case in elevation, with the wheel in place.

The object of my improvement is to obtain a direct action upon the wheel from the rotary motion of the water in the scroll, and thereby gain an increased power by means of a curb concentric with the wheel, having openings therein and guides projecting therefrom.

In the accompanying drawings, A represents the wheel, the buckets of which have the ordinary double side vents to discharge the water. The wheel is constructed of an inner case, B, to the ends of which the side vents are secured in any proper manner, while the buckets C are made tangent to the inner case, and are therefore perfectly flat, except at their receiving-ends, which are made angular or curved, as shown in fig. 1. The depth of this receiving-angle or curved portion of the bucket is proportioned to the length and width of the bucket, and receives the first action of the water from the guides.

The scroll to which my improvement relates is known as the water-chest, and consists of an inner and an outer case. The inner one, D, is concentric with the wheel, and encloses it, and the outer one, E, is the water-case, which is made to diminish in regular curves from its mouth to its connection with the inner case, and forms the scroll. The concentric curb D is provided with a series of openings or issues, *a*, and a series of guides projecting from the curb into the scroll, in such a manner as to interrupt the rotary motion of a portion of the water, and direct it through the openings *a* upon the buckets, in such a manner as to obtain the direct action of the rotary current in the scroll. The openings or issues *a* in the scroll are proportioned to the area of the buckets, while the spaces between these openings *a* and the guides are closed by the inner case D, so as to prevent the water in the scroll having access to the buckets, except as directed by the guides through the openings.

The guides *b* project into the scroll, and the distance of their projection is governed by the area of the openings *a* and the number of the buckets of the wheel, so as to admit the water to the wheel in proportion to the supply necessary for each bucket. The guides are made to overlap the openings *a* sufficient to give the proper direction to the water upon the buckets. The guides and openings thus arranged, each bucket will be enclosed by the case D, about two-thirds its length, whereby the water is confined within and upon the buckets of the wheel, and held there until it is discharged by the motion of the wheel.

Heretofore the inner side of the scroll has been open to the whole face of the buckets, and there has been as much pressure on the scroll as on the buckets, and besides, should there be a lack of water in the scroll, the pressure on the buckets will be lessened, but by means of the concentric curb D, these disadvantages are avoided. The object of closing up the inner case of the scroll between the guides is to bring the water close to the buckets, and upon each bucket, and confine it there with better effect than has been done heretofore, and at the same time having the benefit of the rotary motion of the water to back it up in the scroll, thereby producing great power in the action of the water upon the wheel.

I measure the water to be discharged by the area of the openings in the concentric curb D, so that the water will have free egress from the wheel, and the issues of the concentric curb D will be well supplied. The guides *b* and concentric curb D serve to hold the water in each bucket until it passes to the next opening.

It will be seen that the action of the water on the wheel from a scroll that admits the water into the whole length of the bucket at the same time, will be very nearly from the outside of the scroll-case to the centre of the wheel, in nearly a straight or curved line, and the water begins to discharge nearly as soon as it strikes the bucket, doing but little good. To obviate this, and obtain the direct action of the water, I make the guides *b* of a length greater than the width of the openings *a*, so as to overlap them, as shown in figs. 1 and 2, at *c*, for the purpose of interrupting the direct line of action from the scroll to the centre of the wheel, and cause the

water to enter laterally, and to receive its direction upon the buckets by the inclined or curved projection of the guides.

It frequently happens that there is a lack in the supply of water. To close the gate partially at the mouth of the scroll does not remedy the loss of power. I have, therefore, overcome this disadvantage by arranging within the scroll one or more gates, F, which may be adjusted so as to limit the action of the water upon a certain number of buckets, and thus shorten the scroll, whereby the full power of the water may be obtained, whether there be much or little in the supply. This gate F is hinged to the inner side of the outer case, at G, and is curved to correspond with the same. Its free end is connected to the outer case, E, by a screw-rod, H, at the outer end of which is a thumb-screw, I, by which the gate may be opened and closed. When closed so as to shorten the length of the scroll, the end of the gate rests against the overlapping end of the guide b, as shown in fig. 1, and when open it is drawn back by the thumb-screw I, so as to allow the action of the water upon the whole number of buckets. The thumb-nut may be pivoted to the outer case, or the gate may be adjusted and held in place by any other device. The gate F is located in the scroll, so that when closed, to reduce the length of the scroll, not less than four guides will receive and direct the action of the water upon the buckets. The gate, therefore, is arranged to act in connection with the openings a in the case D, and has been found to be of great advantage in adapting the wheel to the supply of water.

Having thus described my improvement, I claim—

1. Making the curb D, between the guides b and openings a, concentric with and enclosing the wheel so as to form a closed case to the buckets of the wheel between each guide and opening, in the manner herein described.

2. The hinged gate F, the concentric curb D, with its issues a and projecting guides b, when arranged and combined as described.

3. The gate F, hinged within the scroll, for the purpose of shortening or diminishing the length of the same, to adapt it to the supply of water, as described.

In testimony whereof, I have hereunto signed my name.

TIMOTHY ROSE.

Witnesses:

S. R. HUNTER,

W. S. HUNTER.