

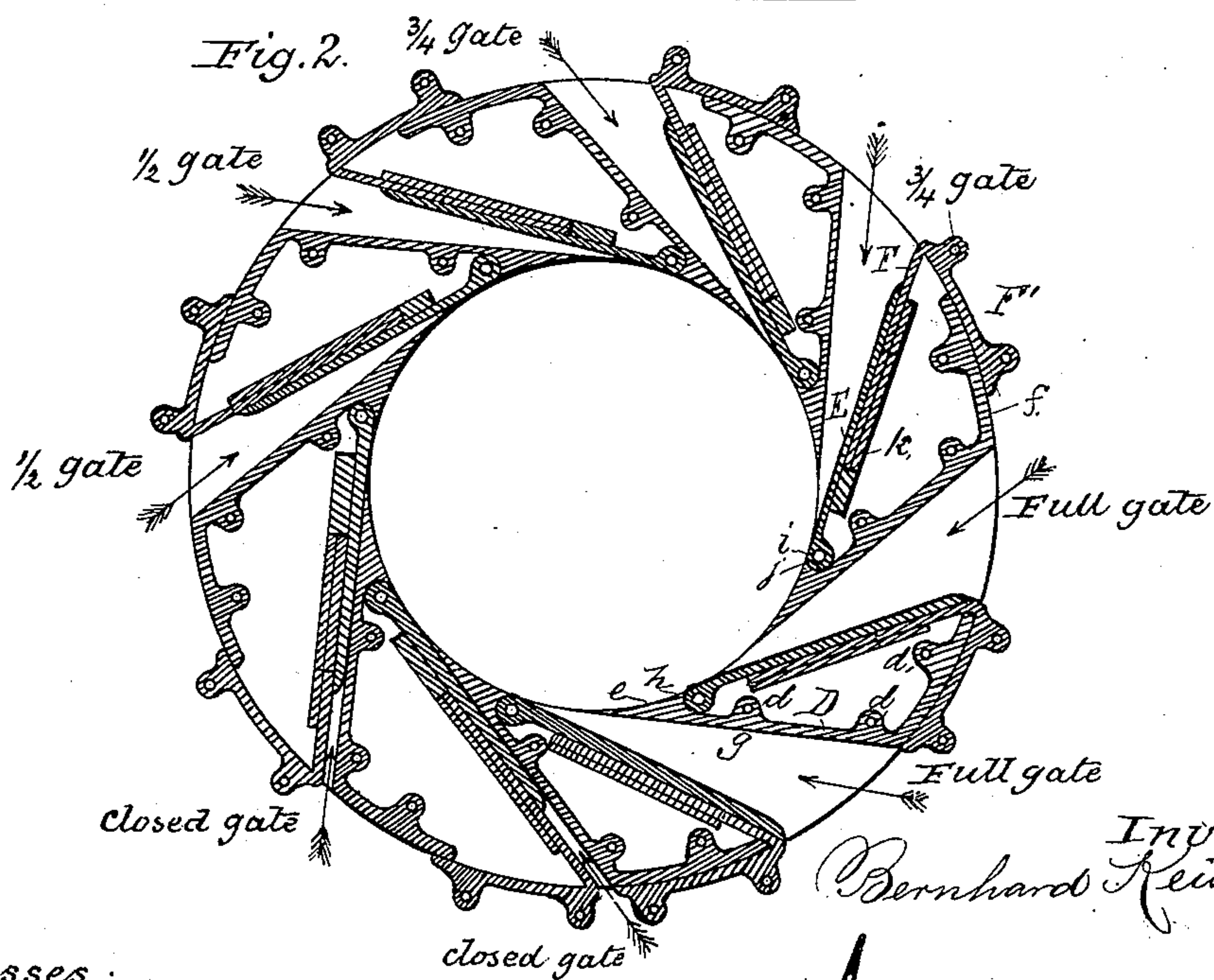
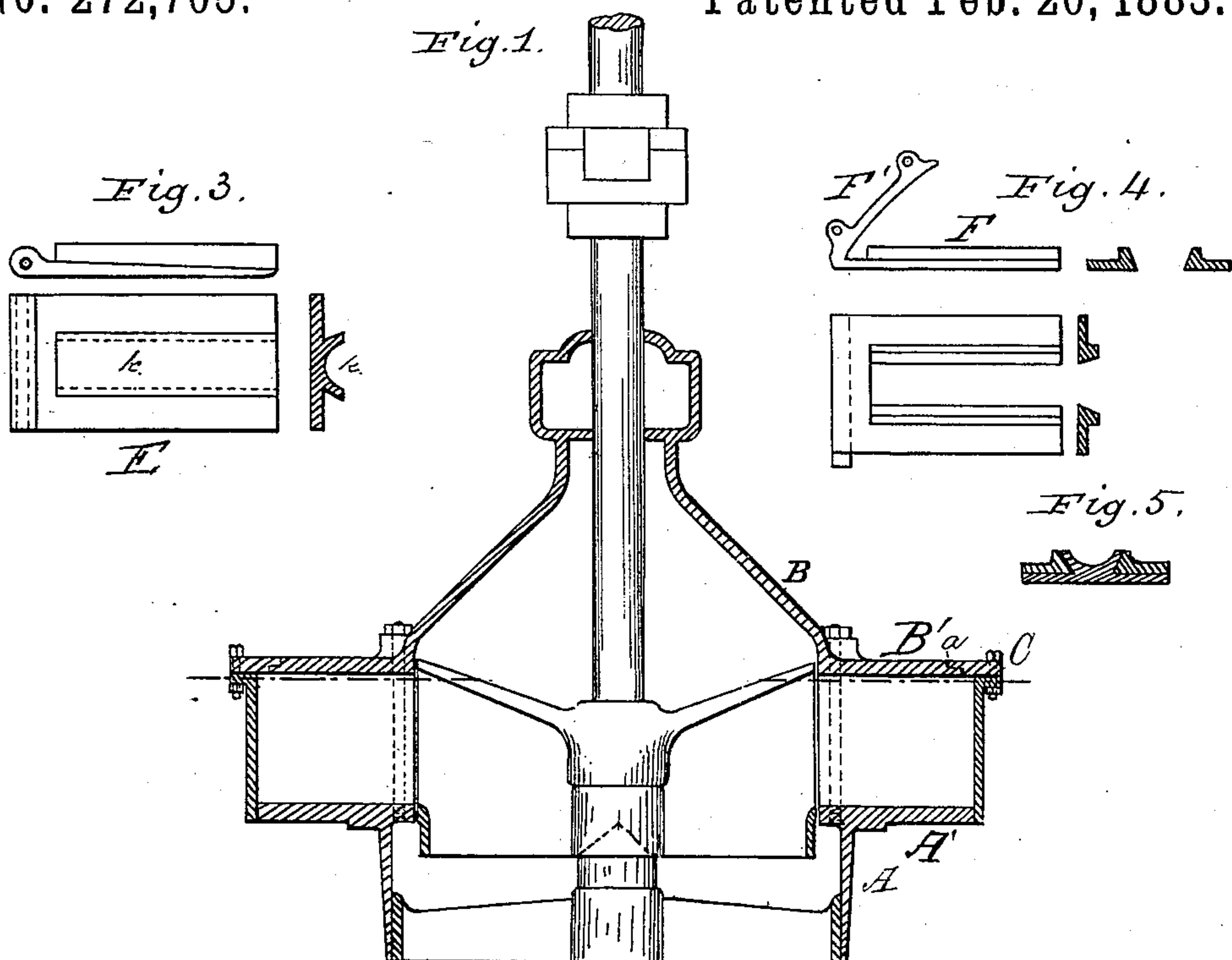
(No Model.)

B. KEISER.

TURBINE WATER WHEEL.

No. 272,705.

Patented Feb. 20, 1883.



Witnesses:

Wm. Masson.

By,

Inventor
Bernhard Reiser

Attorney.

UNITED STATES PATENT OFFICE.

BERNHARD KEISER, OF FERNDALE, PENNSYLVANIA.

TURBINE WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 272,705, dated February 20, 1883.

Application filed November 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, BERNHARD KEISER, a citizen of the United States, of America, residing at Ferndale, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Turbine Water-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in turbine water-wheels; and it consists more especially in the construction and arrangement of the chutes or water-ways, by which construction I am enabled to contract and enlarge the same without changing the angle at which the water strikes the wheel, whereby the full force of the water is utilized and an expansible tapering passage is provided.

In the annexed drawings, which illustrate my invention, Figure 1 is a longitudinal vertical section, and Fig. 2 is a horizontal section, showing the chutes or water-ways in different positions. Figs. 3, 4, and 5 are detailed views of the movable portions of the chute.

In the annexed drawings, A represents the lower casing, which is provided with a central shaft-bearing or step, which is held into place and supported by a bridge which is located in the lower portion, as shown. The under portion of this casing is provided with an outwardly-extending ring or flange, A', to which the stationary and movable parts of the water-ways are bolted or otherwise attached. The upper casing or deck, B, of the wheel is stationary in respect to the lower casing when they are united, and the horizontal extending portion B' of this casing or deck is provided with a step, as shown at *a*, upon which rests a ring, C, to which are bolted the exterior portions of the movable chutes, so as to let on or cut off the water-supply when this ring is turned, which is done by suitable mechanical means, as a rack and pinion.

Between the upper and lower horizontal portions of the casings A' and B' are secured the stationary water-guides D, and they are lo-

cated between these casings, as shown in Fig. 2. These parts D are attached to the casings B' and A' by bolts which pass through the upper and lower casings and the eyes *d d*, thereby uniting the parts rigidly to each other; or, if desirable, these portions of the chutes may be castings, so as to form an integral part of the upper and lower casings. The inner end, *e*, of these stationary parts of the chutes are curved so as to be of the same radii as the inner opening in which the wheel is located, and the outer sides, *f*, are curved so as to correspond with the outer radii of the casings, the vertical portion *g* of these chutes D tangentially located with respect to the periphery of the water-wheel. The inner sides of these parts of the chutes D are provided with sockets *h*, which are located near their inner ends, for the reception of the movable portion or side of the water-way.

The movable portions of the chute consist of two parts or castings, E and F, the part F being provided with an angular curved portion, F'. The inner part of the chute E is pivoted within the socket *h* by the bolts *i*, which pass through the eyes *j* and the external casing. The stationary way E is provided with raised dovetailed projection *k*, as shown in Fig. 3, and the movable portion of this chute F is also provided with a dovetailed opening, by means of which the parts are united to each other, as shown in Fig. 5; thus allowing them to be expanded or contracted as the gates are opened or closed. The portion F' of the chute F is curved on its outer portion, so as to extend over the curved portion F' of the stationary portion of the chute D, so as to be flush with the same. These portions F' and *f* have corresponding curves. By these means I make the movable portion or one side of the chute expansible longitudinally, and thus leave no break in the parts and retain the most desirable and effective configuration—that is, a long tapering chute which opens directly upon the periphery of the wheel. The outer curved portions, F', of these chutes are bolted to the outer ring, C, and when it is turned it opens or closes the water-way, the parts E and F sliding one upon the other, and being pivoted at the inner end of the water-way, the chutes always retain their wedge shape, and at all

positions the water is led to the periphery of the wheel which is adjacent to the ends of the chute with the greatest force.

5 I am fully aware that previous to my invention water-wheels have been provided with chutes which are expansible longitudinally, and I do not claim such invention, broadly; but

What I claim as new, and desire to secure by Letters Patent, is—

10 In a water-wheel of the class described, the stationary guides D, rigidly secured to the upper and lower casings, in combination with

the hinged way E, with dovetailed portion K, and corresponding dovetailed way, F, with curved portion F', attached to the operating- 15 ring O, substantially as described, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

BERNHARD KEISER.

Witnesses:

LEVI HUNSICKER,

R. CLAY HAMERSLY.