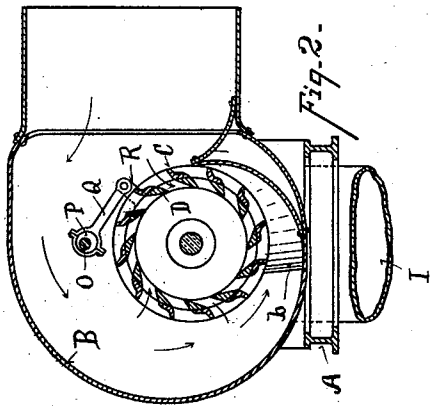
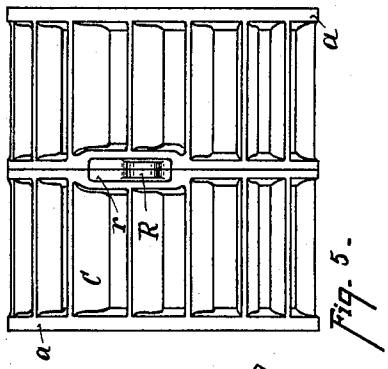
(No Model.)

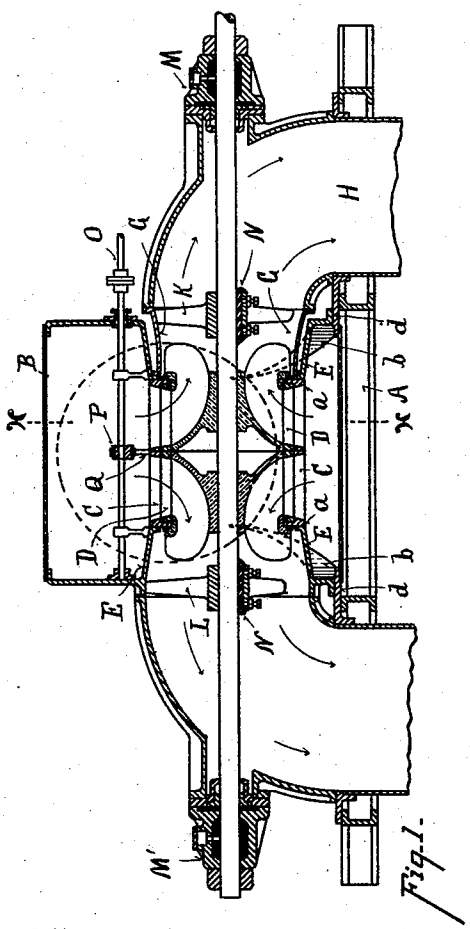
E. R. STILWELL.

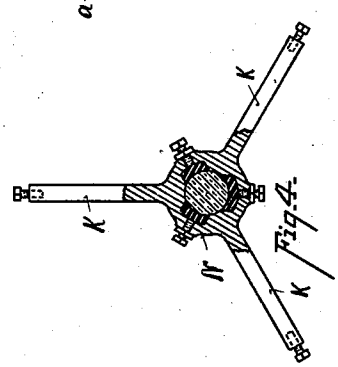
DUPLEX WATER WHEEL REGISTER GATE.

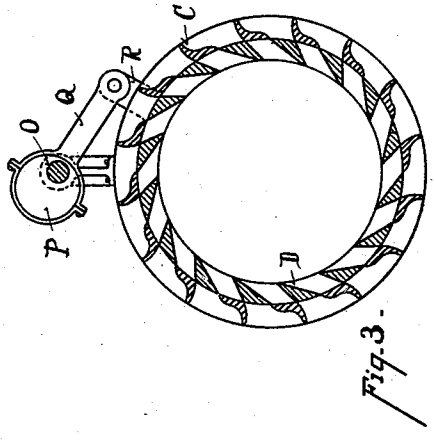
No. 588,501. Patented Aug. 17, 1897.











Witnesses
C. W. Miles
Eloise B. Kaiser.

Inventor
Edwin R. Stilwell
by Wood & Dond
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWIN R. STILWELL, OF DAYTON, OHIO, ASSIGNOR TO THE STILWELL-BIERCE & SMITH-VAILE COMPANY, OF NEW JERSEY.

DUPLEX-WATER-WHEEL REGISTER-GATE.

SPECIFICATION forming part of Letters Patent No. 588,501, dated August 17, 1897.

Application filed November 5, 1896. Serial No. 611,159. (No model.)

To all whom it may concern:

Be it known that I, EDWIN R. STILWELL, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Duplex-Water-Wheel Register-Gates, of which the following is a specification.

This invention relates to a duplex horizontal water-wheel employing the registered class of casing.

The object of this invention is to employ a scroll-casing and mechanism to simultaneously operate the gate mechanism for both wheels.

The features of my invention will be more fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a central vertical longitudinal section of my improvement in position for use. Fig. 2 is a transverse section on line *x x*, Fig. 1. Fig. 3 is an enlarged sectional plan view of the chute-case and gate mechanism, as shown in Fig. 2. Fig. 4 is a sectional plan view of one of the bridge-plates. Fig. 5 is a plan view of Fig. 3.

A represents the bed-plate upon which the water-wheel is mounted. It is supported upon the scrollway which forms the outer casing of the wheel. E E represent cylindrical plates which form the outer walls of the duplex chute-cases. These plates are provided with end flanges *b*, which form the side walls of the scrollway. B represents the outer wall of the scroll way or casing. These parts are rigidly connected together and form a bridge for supporting the water-wheel case on its bed-plate. The chute-case and water-wheel are placed at one side or at the helix of the scroll. The end flanges *b* approach each other near the terminal of the scrollway, as shown in Figs. 1 and 2. In order to strengthen the scrollway, the flanges *b* of plates E are provided with horizontal flanges *d*, which rest on the bed-plate A, making a firm strong support for the casing and wheel.

The chutes C of the register-cases are rigidly connected to the cylindrical plates *a* of the chute-case, and these are in turn rigidly connected to the flange of plates E. The register-case C, plates *a*, and plates E with their flanges *b* united form a bridge for the scrollway as well as a support for the entire casing and wheel.

The registering-casing D and the plates E form a bridge-support for the entire weight of the water-wheel.

The draft-tubes H I are preferably connected by extensions to plates E.

On one side I have shown a secondary cylinder G rigidly connected to the plate *a* of the chute-cases, and a bridge-tree K and the draft-tube H are connected to this inside or secondary cylinder, while at the opposite side the bridge-tree L is anchored to the plate E itself, which forms a cylindrical extension of the chute-case extended beyond the buckets of the water-wheel.

M M′ represent shaft-bearings mounted upon the draft-tubes upon each side of the wheels.

N represents the bridge-tree bearing.

O represents a shaft journaled in the scroll-case B, upon the central portion of which is mounted an eccentric P. This eccentric operates the crank-arm Q.

R represents a stud connected to the respective register-gates, and it is hinged to the crank-arm Q. *r* represents a recess in the chute-case into which said stud R projects and travels as it is thrown by the crank-arm Q back and forth to rotate the register-gate D to open and close the same.

In Fig. 2 the gates are shown open and in Fig. 3 the gates are shown closed. Both sets of gates are operated simultaneously by the revolution of shaft O.

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

1. The combination in a water-wheel having an outside scroll-casing, of a duplex chute-case C, annular plates E rigidly connected to the duplex chute-case, end flanges *b* formed on the plates E and constituting a bridge for the scrollway, and a support for the water-wheel and casing, substantially as described.

2. A duplex-water-wheel case composed of duplex chute-cases, a central hub connected at one end thereof, cylindrical plates E connected to the opposite ends of the chute-cases and constituting the inner wall of a scrollway,

end flanges *b* rigidly connected to the plates E and forming the side walls of the scrollway, and the scroll-plate B rigidly connected to said flanges *b*, substantially as described.

3. The combination of a duplex chute-case with the scroll-casing formed of the plates E, flanges *b* and scroll-plate B, connected together, said flanges *b* being inclined toward each other near the terminal of the scrollway, substantially as described.

In testimony whereof I have hereunto set my hand.

EDWIN R. STILWELL.

Witnesses:
W. R. WOOD,
OLIVER B. KAISER.