(No Model.) 2 Sheets—Sheet 1.

R. W. TUFTS.

WATER WHEEL.

No. 260,913. Patented July 11, 1882.

Fig. 1.

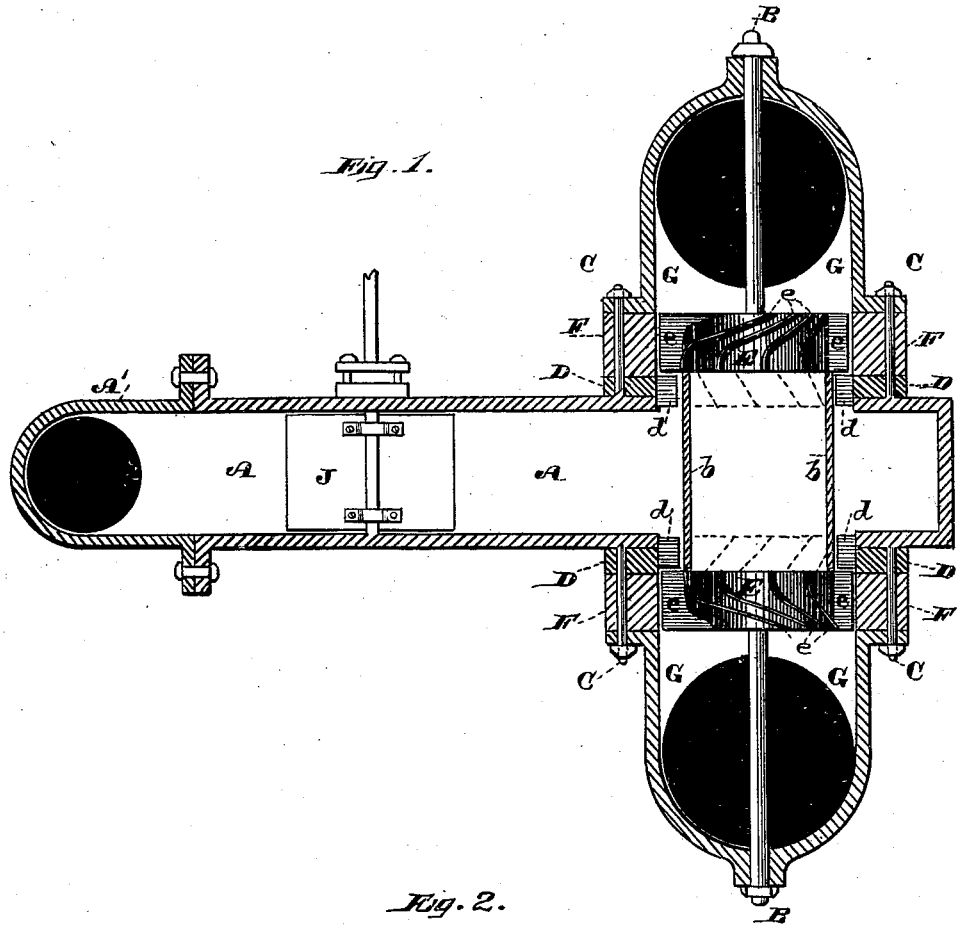
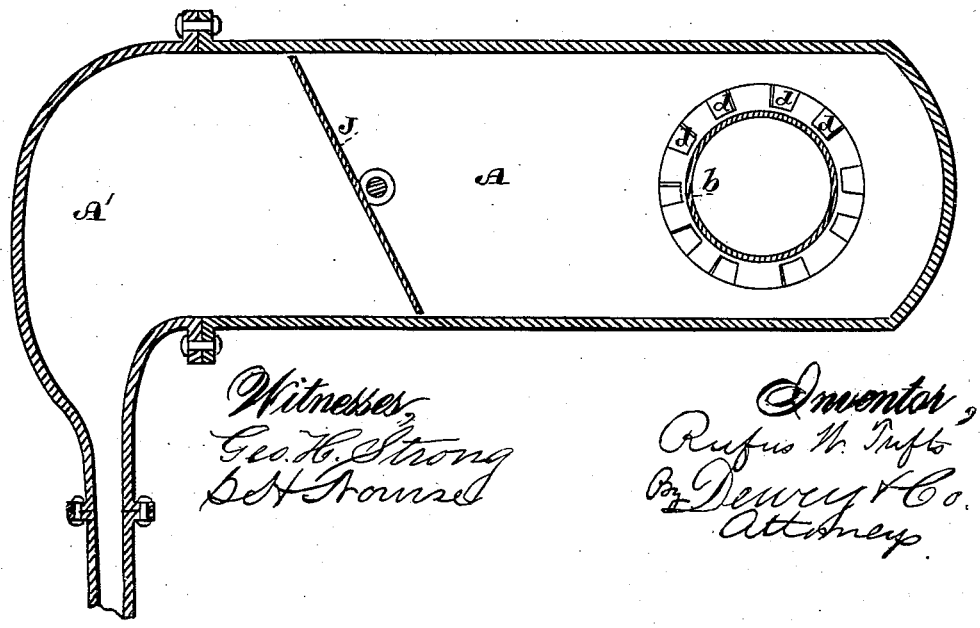


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

R. W. TUFTS.

WATER WHEEL.

No. 260,913. Patented July 11, 1882.

Fig. 3

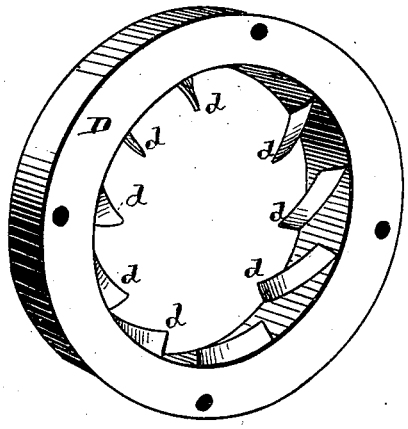


Fig. 4.

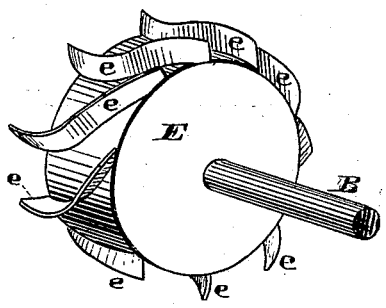
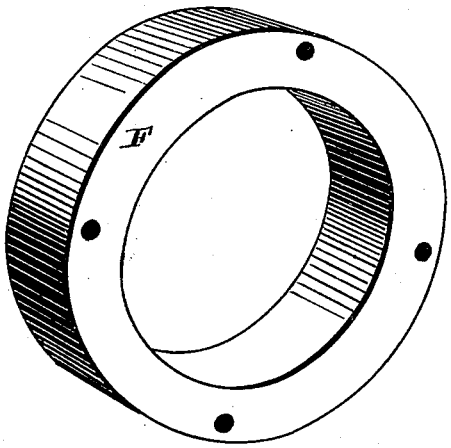


Fig. 5.



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UNITED STATES PATENT OFFICE.

RUFUS W. TUFTS, OF SANTA CRUZ, CALIFORNIA.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 260,913, dated July 11, 1882.

Application filed March 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, RUFUS W. TUFTS, of Santa Cruz, county of Santa Cruz, State of California, have invented an Improved Water-Wheel; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the class of water-wheels and particularly to certain improvements in those in which a body of water under pressure is confined and in seeking escape is caused to pass through suitable channels upon wheels adapted to revolve, whereby said wheels are moved with power and rapidity.

My invention consists in the combination and arrangement of a wheel or wheels having curved flanges set at an angle, rigidly secured upon a central shaft, with a peculiar directing chute or chutes, the channels of which are in relation with the flanges upon the wheels, and which direct the pressure of the water thereon to the best advantage, as will hereinafter more particularly appear, reference being made to the accompanying drawings, in which—

Figure 1 is a horizontal section. Fig. 2 is a vertical section. Fig. 3 is a perspective view of the rim D, with its directing-flanges. Fig. 4 is a perspective view of the wheel E. Fig. 5 is the casing or rim circumscribing said wheel.

Let A represent a hollow casting, of any suitable shape, open at one end and having near its closed end an opening through both sides, through which passes a shaft, B. This shaft has a large center, *b*, the diameter of which is a little less than that of the opening through which it passes. The casing may be set in any position, and the ends of the shaft are to be supported in journals, so that said shaft is held in the center of the opening and may revolve freely without having any friction upon the casing.

C represents bolts (here shown as four in number) passing through the casing at points about equidistant from the central shaft, B. The ends of these bolts project upon each side of the casing and receive the rims D, one on each side, which are pressed up closely to the sides of the casing. These rims have a central aperture of about the diameter of the shaft-aperture in the casing. The inner edge of the rims is provided with flanges *d*, set at an angle across the rim, as shown. They form the directing-chutes. There may be as many of these chutes as desirable. The flanges are wide enough to extend across the space between the circumference of the aperture in the casing and the large center *b* of the shaft B, so that the only outlets from the casing are between the flanges—that is, the passages or directing-chutes made by said flanges.

Upon shaft B are the wheels E, one on each side of the casing and near to the rims D. These wheels have the curved flanges or buckets *e* upon their faces. They are set at an angle across the wheels, and extend in a direction opposite to the directing-chute flanges *d*. The diameter of the wheels and flanges *e* is about the same as the central aperture of the rims, so that the ends of the flanges *e* in their revolution pass the ends of flanges *d*, and the water is directed by the latter against the former. The wheels E are adapted to fit closely against the center *b* of the shaft B, and are rigidly secured to said shaft. One may be permanently secured and the other keyed, so that when removed the shaft may be drawn out.

F represents rims or casings fitting upon the extended bolts C upon each side, close against rims D. These have central apertures, which allow them to fit over the wheels E and completely encircle them, forming an outer wall or rim for the flanges *e* of the wheels. They are large enough to allow the wheels to turn freely therein.

G G represent the discharges. The shaft B passes through them, and they are adapted to fit upon the ends of bolts C, which then receive nuts whereby the discharge-pipes are secured. These discharges thus fit up closely against the sides of the wheels and receive the waste water therefrom. They may lead in any direction desired, and have connected with them suitable waste-pipes. They may also be employed to operate the wheels by suction, if desired.

The base or open end of casing A has bolted to it a casting, A′, the end of which is narrowed down and is adapted to receive the service-pipe.

In the casing A is a regulating-gate or butterfly-valve, J, by which the amount of water may be controlled. If preferable, a valve in the service-pipe might be employed instead.

The operation of the wheel is as follows:

Water under pressure is admitted into casing A and its pressure regulated by the valve J. It is directed by the flanges *d* in the chutes made by them upon the flanges *e* of the wheels, and pressing upon them near their inner ends causes the revolution of the wheels. The shape of the flanges allows the free escape of the water after having performed its work, thus providing for the freedom of the wheels. The water passes off through discharges G G.

There is very little friction in this device. The shaft B is held free of the adjacent parts by its journals and the full force of the water is transmitted to it. The pressure of the water, being directed to each side from the center upon the wheels, keeps the shaft well in position; but in order to prevent any tendency to drift I will put collars upon the shafts in suitable places.

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

The water-wheel consisting of the casing A, shaft B, and rims D, having inclined flanges *d*, in combination with the water-wheels E, rigidly secured upon shaft B, and provided with curved inclined buckets *e*, rims F, the discharges G, and the bolts C, all arranged and constructed substantially as described, and for the purpose set forth.

In witness whereof I hereto set my hand.

RUFUS W. TUFTS.

Witnesses:
T. V. MATHEWS,
W. C. HOFFMANN.