(No Model.) 2 Sheets—Sheet 1.

C. A. CHASE.

WATER WHEEL.

No. 492,862. Patented Mar. 7, 1893.

Fig. 2.

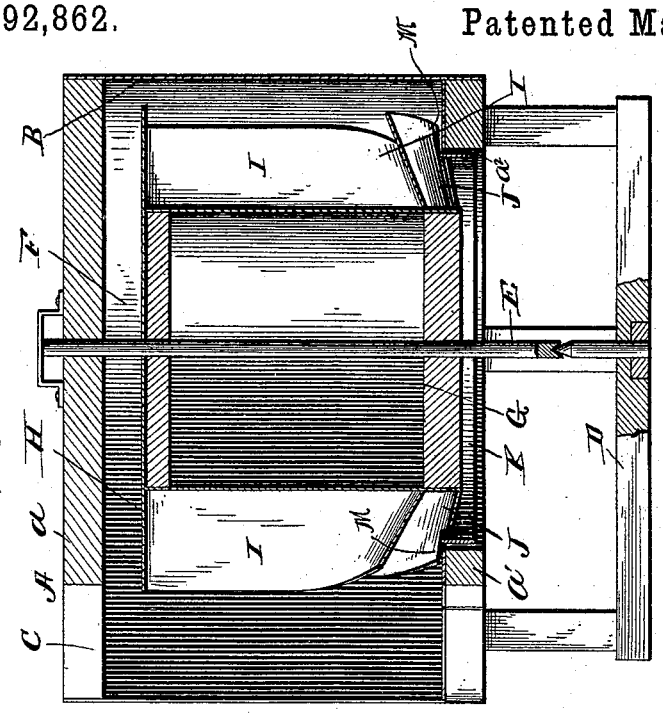
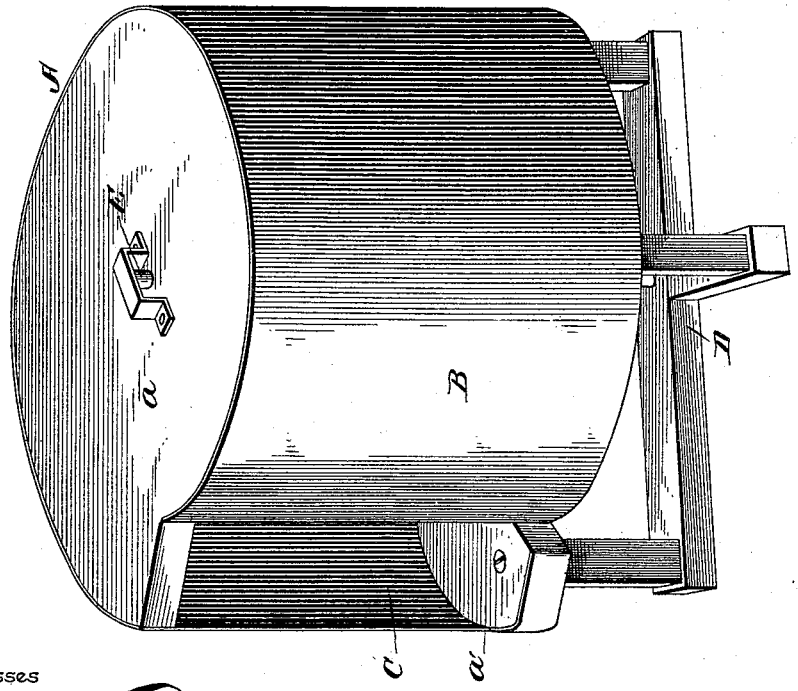


Fig. 1.



Witnesses

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C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

C. A. CHASE.

WATER WHEEL.

No. 492,862. Patented Mar. 7, 1893.

Fig. 4.

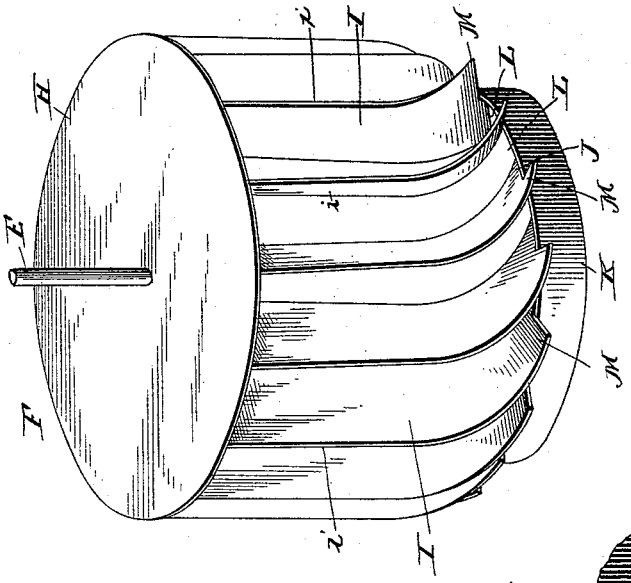


Fig. 5.

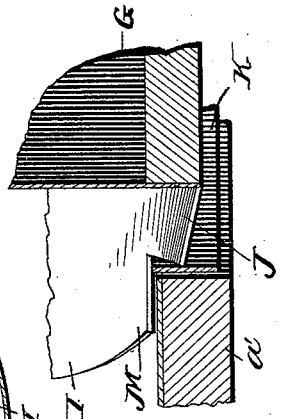
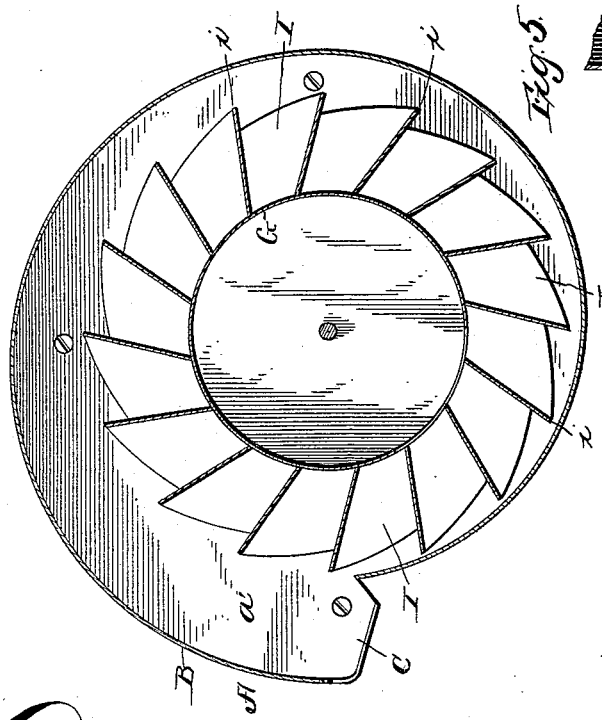


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES A. CHASE, OF MORO, MAINE.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 492,862, dated March 7, 1893.

Application filed June 14, 1892. Serial No. 436,688. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. CHASE, a citizen of the United States, residing at Moro, in the county of Aroostook and State of Maine, have invented a new and useful Water-Wheel, of which the following is a specification.

This invention relates to water wheels; and it has for its objects to provide certain improvements in turbine water wheels whereby considerable power is obtained from a small head of water, and by the construction of which the water passing through the wheel is utilized a second time and to its fullest extent.

To this end the main and primary object of this invention is to generally improve upon the construction of wheels of the type herein described.

With these and many other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings;—Figure 1 is a perspective view of a water wheel constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a horizontal sectional view. Fig. 4 is a detail in perspective of the wheel removed from the wheel casing. Fig. 5 is an enlarged detail sectional view.

Referring to the accompanying drawings;—A represents the wheel casing comprising the top and bottom plates a and a', surrounded by the spirally disposed casing rim B having the ends thereof from the side tangent inlet C, through which the water is conducted to the wheel mounted within the casing. The said casing is supported horizontally upon the bridge D, spanning the bottom circular opening a^2, in the lower casing plate a'.

Mounted in suitable bearings in the top of the casing and stepped in the bridge D, is the wheel shaft E, upon which the horizontal water wheel F is mounted to drive said shaft under the impulse of the head of water and communicate motion to the machinery to be driven. The said wheel F, comprises the central core or hub G, to the top of which is secured the flat top plate H, projecting beyond the periphery of the core or hub, and against the underside of which rests the upper ends of the water buckets I. The said water buckets I are secured at their inner edges to the hub of the wheel and inclined outwardly therefrom at a tangent to the shaft carrying said hub. The buckets I are regularly spaced from each other and are provided with vertical straight portions i, extending from the flat top H of the hub in a line with the shaft to a point from the top of the hub about three-fifths of the length of the bucket, and from such point are curved backward with respect to the direction of movement, on an angle of about forty-five degrees from a vertical plane so as to form a gradual bottom discharge for the wheel. The lower curved ends of the buckets gradually taper to a narrower width than the straight upper portions of the same, so that the pressure of the head of water is retained in the wheel. The said buckets are further provided at said lower curved ends with the projecting discharging tongues J, which are surrounded or inclosed by the lower ring band K, which thus incloses the series of bottom discharge openings L, formed between the over-lapping ends of the buckets. Said ring band snugly fitting within the lower circular opening a^2, in the bottom of the casing so as to allow for the free bottom discharge of the water while at the same time forming a bearing collar for the wheel. The lower curved portions of the buckets above the discharge tongues thereof, project laterally beyond and above the said ring band and overlap the bottom, a', of the casing, as at M so that the spiral rim does not shut off a complete passage or water way around the wheel, but allows a certain quantity of the utilized water to discharge back into the casing so that a living column of water is carried entirely around the wheel, and the buckets are always loaded with water. This column which forms a part of the discharge of the wheel unites with the incoming head and is a second time utilized to greatly add to the power of the wheel and thus utilize any water which might be otherwise wasted.

The many advantages of the herein described wheel will be readily apparent to those skilled in the art.

Having thus described my invention, what

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

In a water wheel, the casing having a flat closed top, a flat bottom having a circular bottom opening and a spirally disposed rim connecting said top and bottom, the shaft and the horizontal water wheel mounted upon said shaft within the casing, said wheel comprising a central core or hub, a flat top plate H, projecting beyond the periphery of said core or hub, a series of water buckets arranged upon said hub tangentially to the shaft and having straight vertical portions inclining toward the casing rim from the projecting flat top plate which the upper ends meet, to a point near the bottom of the hub, and at such point provided with tapered rearwardly and outwardly curved portions having narrowed projecting discharging tongues extending into said bottom opening, and laterally projecting portions M, over-lapping the bottom of the casing to form an auxiliary discharge back into the casing, and a lower ring band encircling said projecting tongues at their juncture with the lateral projections M, and working within the circular bottom opening of the casing, so as to separate the two bottom discharges of the buckets and also form a bearing collar for the wheel, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES A. CHASE.

Witnesses:
MARY J. WEBBER,
S. CARRIE MILLER.