Oct. 18, 1927. 1,645,996

F. L. McQUISTON

WATER WHEEL

Original Filed Feb. 26, 1924

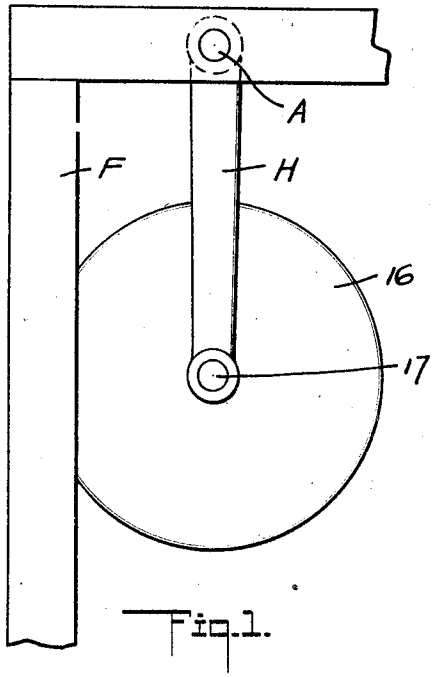


Fig. 1.

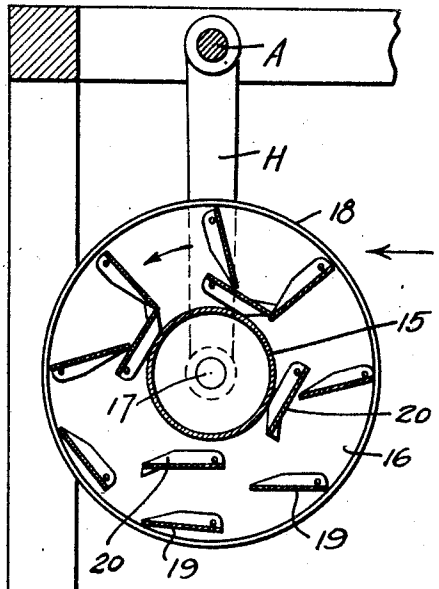


Fig. 2.

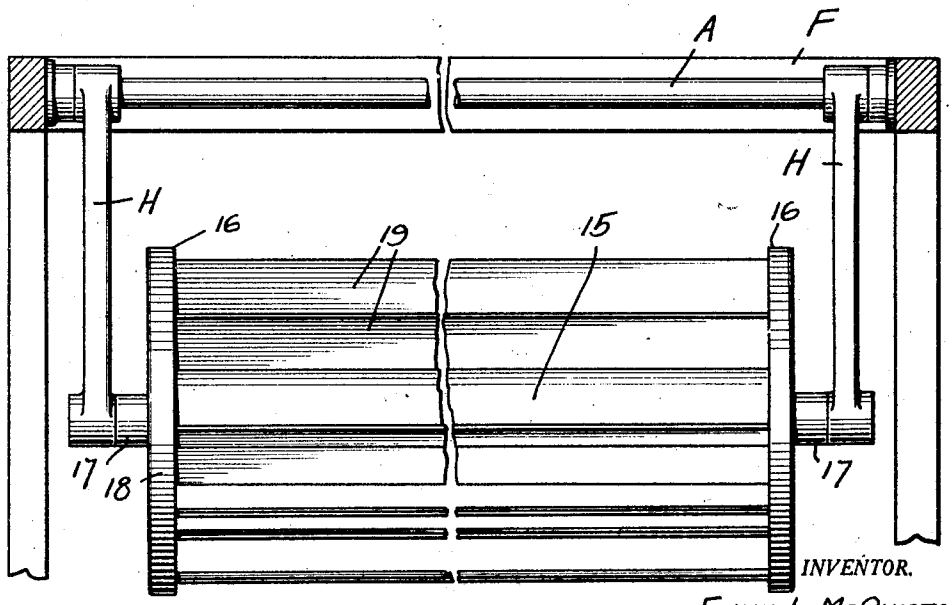


Fig. 3.

INVENTOR.
FRANK L. McQUISTON
BY Munn & Co.
ATTORNEYS.

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UNITED STATES PATENT OFFICE.

FRANK L. McQUISTON, OF REDONDO, CALIFORNIA.

WATER WHEEL.

Original application filed February 26, 1924, Serial No. 57,822. Divided and this application filed June 1, 1926. Serial No. 113,018.

My invention relates to water motors, and particularly to water wheels therefor, and is a division of my co-pending application Serial No. 57,922, filed Feb. 26, 1924, and which issued as Patent No. 1,593,804, July 27, 1926.

It is a purpose of my invention to provide a water wheel mounted for oscillating and rotational movements, having blades capable of being feathered under the action of the moving water in which it is submerged in a manner to fully utilize the power of the water when moving in either direction in effecting rotation of the wheel in one direction and thus generating power for the performance of useful work.

I will describe only one form of water wheel embodying my invention, and will then point out the novel features thereof in claims.

In the drawings

Figure 1 is a view showing in end elevation one form of water wheel embodying my invention and one form of supporting means therefor;

Figure 2 is a vertical transverse sectional view of the water wheel and supporting means shown in Figure 1;

Figure 3 is a view showing the water wheel in side elevation and the supporting means in section.

Referring specifically to the drawings, my invention in its present embodiment is shown associated with a stationary frame F having secured therein an axle A, and hangers H pivoted on the axle and depending therefrom, with the lower ends of the hangers supporting the water wheel embodying my invention.

The water wheel in the present instance comprises a cylindrical body 15 to the ends of which are secured heads 16 provided with stub shafts 17 journaled in the lower ends of the hangers H and thereby providing a rotating support for the wheel while the hangers in connection with the axle permit oscillatory movement of the wheel. The heads 16 are of disk form and are provided at their perimeters with annular flanges 18 which extend inwardly to provide limiting lips for a plurality of blades 19.

As clearly shown in Figure 2, the wheel includes blades 19 and 20, all of which are pivoted at their ends on the heads 16 so as to span the space between the heads and to be disposed between the body 15 and the flanges 18. The blades 20 are arranged in an annular series about the body 15 and they are pivoted in such manner as to be capable of occupying an active position in which they engage and are tangent to the body 15. They are also capable of occupying an inactive position in which they are spaced from the body in lines parallel to a line tangent to the body, as shown in Figure 2. The blades 19 are arranged in a circular series exteriorly of the blades 20 and they are pivoted so as to be capable of occupying an active position in which they are held by the blades of the inner series in positions radial with respect to the body 15. They are also capable of occupying an inactive position in which they are spaced from the body 15 in planes parallel to each other and to a line tangent to the body. The blades 19 are arranged in pairs, and the blades of each pair, when in the active position, are engaged by one of the blades of the inner series and thus held against movement in one direction to permit moving water to act against one side of the blades, yet movable in the other direction when water is acting against the other side to occupy inactive position and to allow the blades of the inner series to likewise occupy inactive position.

In practice, the blades 19 and 20, with water moving in the direction of the arrow as shown in Figure 2, are capable by virtue of their mountings to successively occupy active and inactive positions, or what is commonly known as feathering, and all in such manner to form surfaces against which the water impinges to rotate the wheel in a counterclockwise direction as when viewed in Figure 2, the blades automatically assuming inactive position when moving against the movement of the water so as to offer minimum resistance to the rotation of the wheel and to thereby fully utilize the power of the water. Should the water be moving in the opposite direction the blades 19 and 20 would automatically reverse themselves to successively occupy active and inactive positions in the same manner as when the motor is moving in the first direction, wherefore it will be manifest that the wheel is operable to utilize the power of the water in effecting rotation of the wheel irrespective of the direction of movement of the water.

Although I have herein shown and described only one form of water wheel embodying my invention, it is to be understood that various changes and modifications may be made therein without departing from the spirit of the invention and the spirit and scope of the appended claims.

I claim:

1. A water wheel comprising a cylinrical body mounted for rotational movement, heads at the ends of the body, and blades pivoted on and arranged between the heads, the blades being arranged in an outer circular series and an inner circular series and pivoted in such manner that the blades of the inner series are capable of occupying an active position in which they engage and are tangent to the body, while the blades of the outer series are capable of occupying an active position in which alternate blades engage and are held by the blades of the inner series in positions radial with respect to the body, while the other and alternate blades engage and are held by the blades of the inner series in positions tangentially with respect to the body, and the blades of both series are capable of occupying an inactive position in which they are placed in planes parallel to each other and to a line tangent of the body.

2. A water wheel as embodied in claim 1, wherein the blades of the outer series are arranged in pairs and the blades of each pair when in the active position are engaged by the same one of the blades of the inner series and thus held against movement in one direction to permit moving water to act against one side of the blades, yet movable in the other direction when water is acting against the other side to occupy inactive position and to allow the blades of the inner series to occupy inactive position.

3. A water wheel as embodied in claim 1, wherein the heads are provided with inwardly projecting annular flanges which operate to limit the outward movement of the blades of the outer series in a manner and for the purpose described.

FRANK L. McQUISTON.