(No Model.) 2 Sheets—Sheet 1.

A. GEORGE & W. KLEINDINST.

WATER WHEEL.

No. 384,838. Patented June 19, 1888.

Fig. 2.

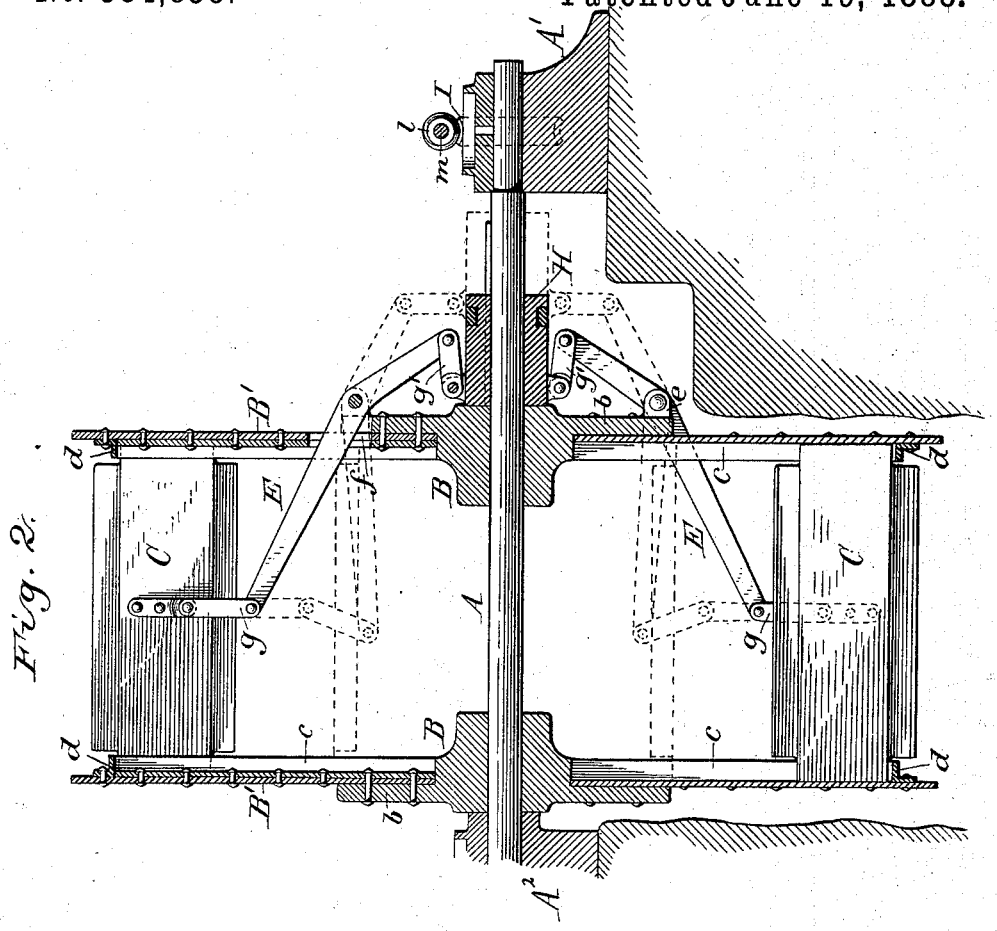
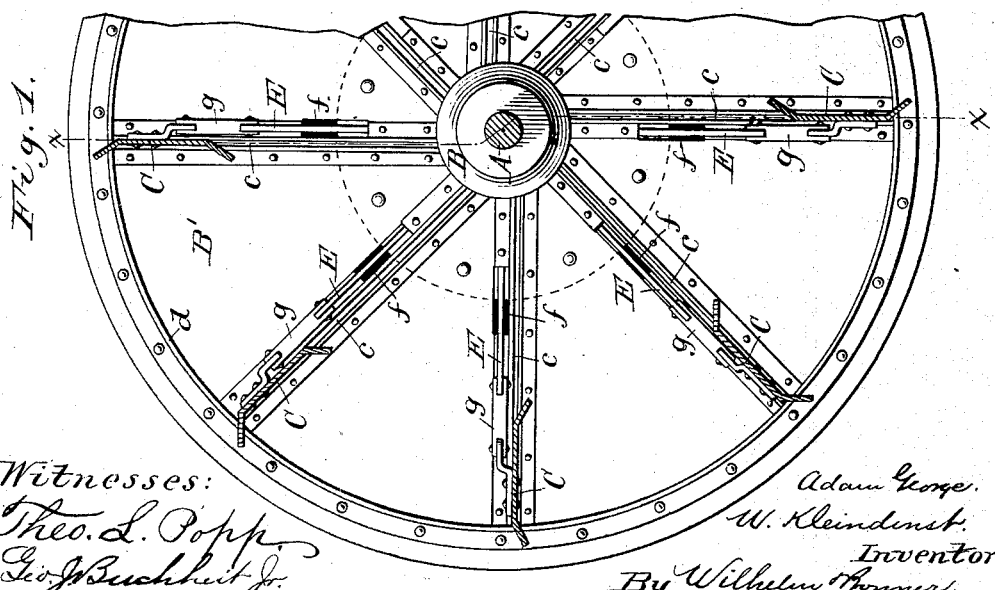


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

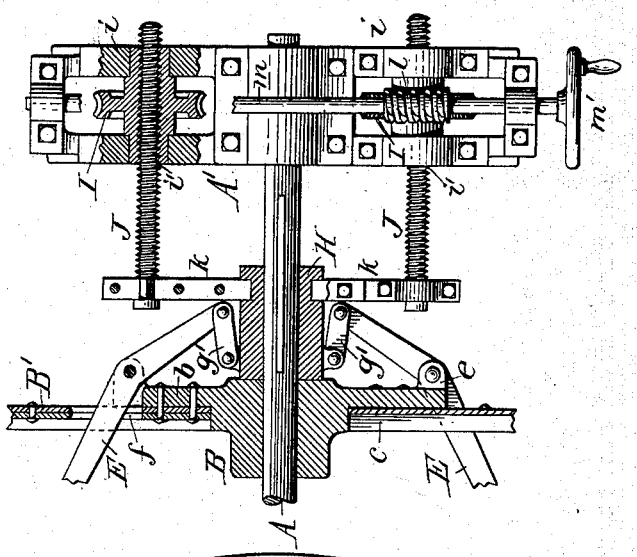


Fig. 3.

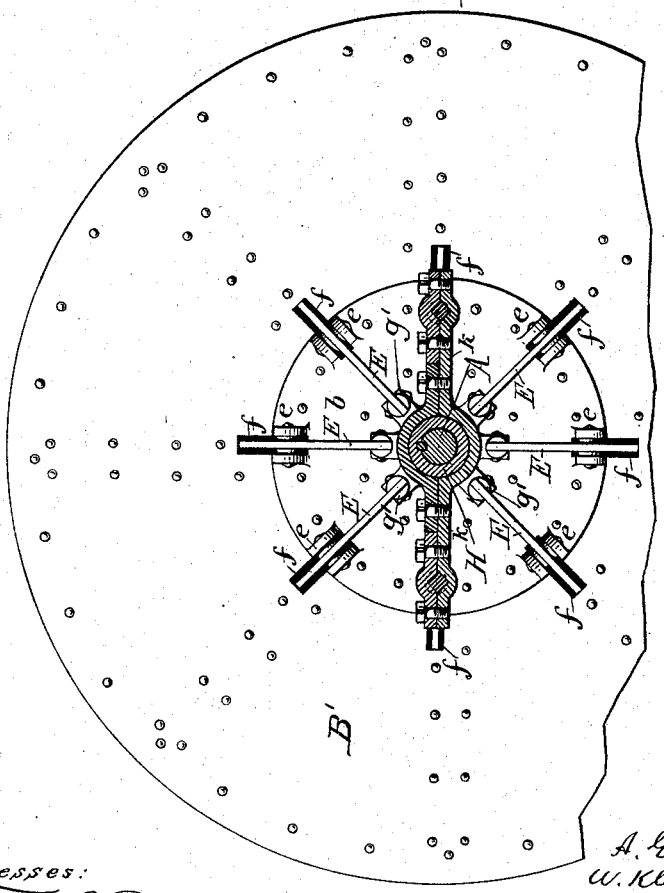
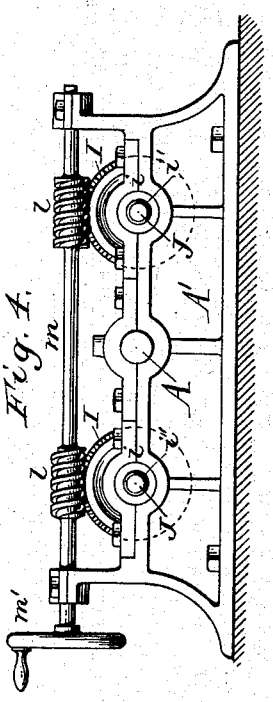


Fig. 4.



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UNITED STATES PATENT OFFICE.

ADAM GEORGE AND WILLIAM KLEINDINST, OF BUFFALO, NEW YORK.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 384,838, dated June 19, 1888.

Application filed January 28, 1888. Serial No. 262,221. (No model.)

To all whom it may concern:

Be it known that we, ADAM GEORGE and WILLIAM KLEINDINST, both of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Water-Wheels, of which the following is a specification.

This invention relates more particularly to undershot water-wheels, and has for its object to render the paddles or floats of the wheel radially movable, so that they can be adjusted to the varying height of the water caused by the tides, heavy rain-falls, dry seasons, &c., and so that the motion of the wheel can be stopped by withdrawing its floats from the water without affecting the position of the main part of the wheel and its supports.

The invention consists of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a fragmentary sectional elevation of our improved water-wheel. Fig. 2 is a vertical cross-section thereof in line *x x*, Fig. 1. Fig. 3 is a fragmentary side elevation of the wheel, with a portion of the shifting mechanism shown in section. Fig. 4 is a side elevation of said shifting mechanism. Fig. 5 is a top plan view thereof, partly in section, and the parts of the water-wheel connected therewith.

Like letters of reference refer to like parts in the several figures.

A represents the horizontal shaft upon which the water-wheel is mounted, and which is journaled in suitable bearings formed in frames or supports A′ A², resting upon the walls of the race or sluice or upon the adjacent banks of the stream. The body or frame of the wheel consists of two hubs, B B, mounted upon the shaft A and having annular flanges *b*, and two annular plates or disks, B′ B′, fitting over the hubs B B and secured to the hub-flanges *b*.

C represents the floats or paddles arranged to slide radially toward and from the center of the wheel in radial guides or ways *c*, secured to the disks B′ and hub-flanges *b*. Each of these guides is preferably formed by two angle-irons arranged parallel to each other and at a short distance apart, the ends of the paddles C being confined between the adjacent angular flanges of the angle-irons, as represented in Figs. 1 and 2. These angle-irons are riveted or otherwise secured to the disks B′ and hub-flanges *b*, and also serve to increase the strength of the wheel.

d represents annular flanges or angle-irons secured to the inner sides of the disks B′ B′ at the outer ends of the guides or angle-irons *c*. These flanges limit the outer movement of the paddles or floats C, and also stiffen the outer portions of the wheel.

E represents radial actuating-levers pivoted between lugs or ears *e*, formed on the outer faces of the hub-flanges *b*, and projecting with their inner portions through radial slots or openings *f*, formed in the adjacent portions of the disks B′, hub-flanges *b*, and angle-irons *c*. The actuating-levers E are pivotally connected at their inner ends to the paddles C by links *g*, and at their outer ends to a sliding collar or sleeve, H, mounted on the shaft A, by links *g′*. Each paddle is provided with an actuating-lever, E. Upon shifting the collar H upon the shaft A in either direction all of the paddles C are simultaneously moved inwardly or outwardly in the guides *c* toward or away from the center of the wheel. The collar H is held against rotary movement on the shaft by a key or feather engaging in a longitudinal groove formed in the bore of the collar, as shown in Fig. 5.

I I represent worm-wheels journaled in bearings *i i*, arranged in the supporting-frame A′, and J J are horizontal feed-screws engaging with their outer portions in screw-threaded openings *i′ i′*, formed in the hubs of the worm-wheels I I. The inner ends of these feed-screws are secured to the outer ends of horizontal arms *k k*, secured to opposite sides of the shifting collar H. Upon turning the worm-wheels I I the feed-screws are caused to move through the threaded openings of the worm-wheels and shift the collar H.

l l represent worms mounted upon a transverse horizontal shaft, *m*, and engaging, respectively, with the worm-wheels I I. The shaft *m* is mounted in bearings secured to the frame A′, and is provided with a hand-wheel, *m′*, for turning it. Upon turning the hand-wheel in either direction the paddles are moved outwardly or retracted. By this construction

the paddles or floats can be readily adjusted to suit the rise and fall of the stream and be immersed to the proper depth at all times, or they can be wholly withdrawn from the water to arrest the motion of the wheel when desired, thus dispensing with the use of the sluice-gates for this purpose.

It is obvious that our improved wheel may be used as a paddle-wheel for propelling vessels, the paddles being drawn inwardly when the vessel is loaded and moved outwardly when the vessel is unloaded and rises in the water.

We claim as our invention—

1. In a water-wheel, the combination, with the shaft A and the two annular plates or disks B′, provided with radial guides or ways *c*, of the radially-movable paddles or floats C, arranged between said disks and sliding in the ways *c*, the shifting collar or sleeve H, mounted on the shaft A, and the actuating-levers E, connecting said paddles or floats with the shifting sleeve H, substantially as set forth.

2. In a water-wheel, the combination, with the shaft A and the two annular plates or rings B′ B′, provided with radial guides or ways *c*, of the radially-movable paddles or floats C, arranged in said ways between the plates B′ B′, the shifting sleeve H, sliding on the shaft A, actuating-levers E, connecting the paddles C with the shifting sleeve H, and a feed screw or screws, whereby said shifting sleeve is actuated, substantially as set forth.

3. The combination, with a water-wheel, its supporting-shaft, and the frame A′, of radially-movable paddles or floats C, a shifting sleeve, H, having arms *k k*, actuating-levers E, feed-screws J J, secured with their inner ends to said arms, worm-wheels I I, mounted in the frame A′, and having hubs provided with screw-threaded openings, in which the feed-screws J work, worms *l l*, meshing with said worm-wheels, and a horizontal shaft, *m*, upon which said worms are mounted, and provided with a hand-wheel, *m′*, substantially as set forth.

4. In a water-wheel, the combination, with the hubs B B and disks B′ B′, secured to said hubs, of radial guides *c*, secured to said hubs and disks, and each composed of two parallel angle-irons, and movable paddles or floats C, arranged in said guides between the disks B′ B′, substantially as set forth.

5. In a water-wheel, the combination, with the hubs B B and disks B′ B′, secured to said hubs, of radial guides *c*, secured to said hubs and disks and each composed of two parallel angle-irons, and an annular flange or angle-iron, *d*, secured to the inner sides of said disks at the outer ends of said guides or ways, and movable paddles or floats C, arranged in said guides between the disks B′ B′, substantially as set forth.

Witness our hands this 21st day of January, 1888.

ADAM GEORGE.
WILLIAM KLEINDINST.

Witnesses:
JNO. J. BONNER,
FRED. C. GEYER.