

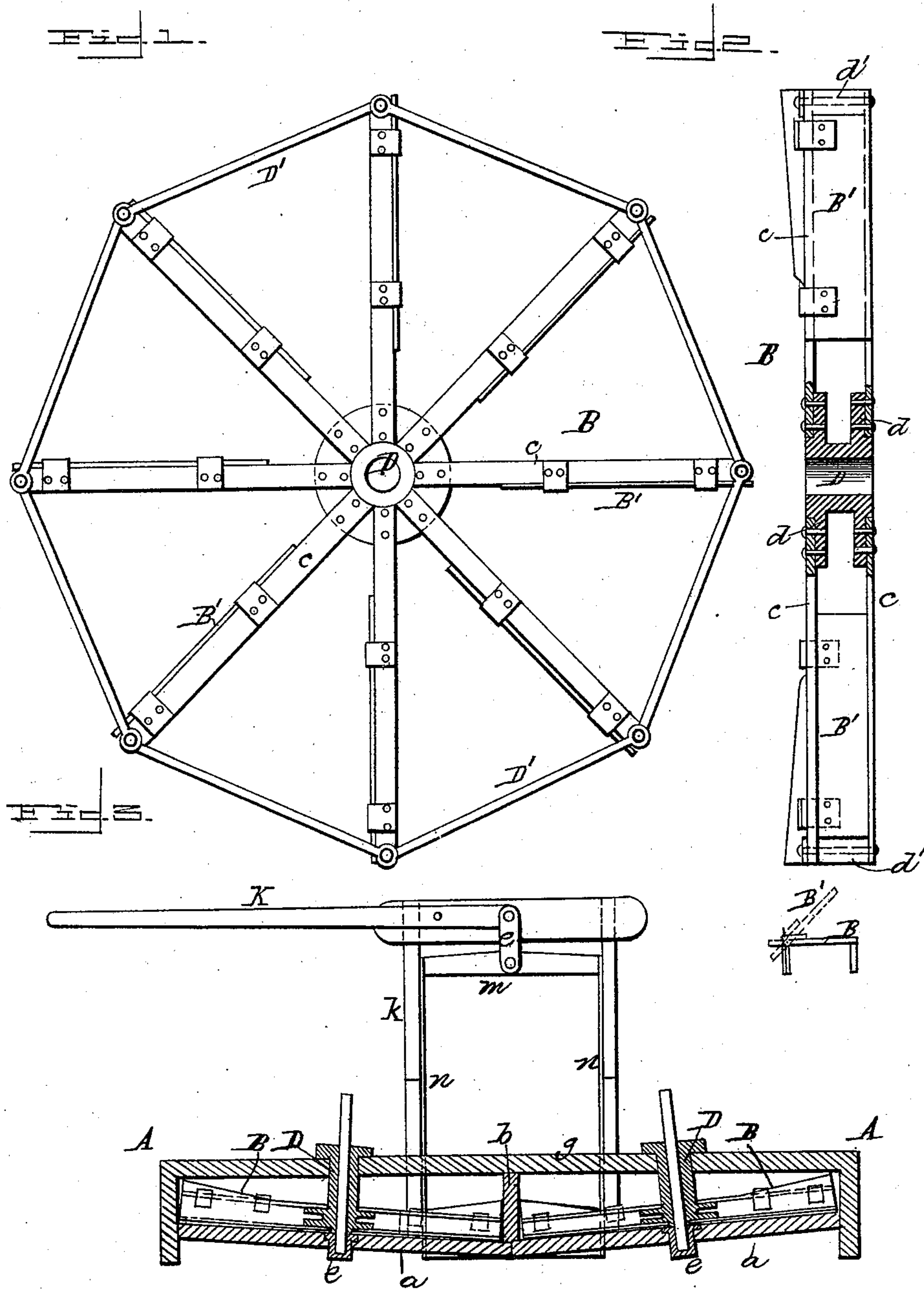
(No Model.)

2 Sheets—Sheet 1.

D. CULVER.  
WATER WHEEL.

No. 456,402.

Patented July 21, 1891.



Witnesses

Herbert Myers  
Joseph A. Hognmann

Inventor

Inventor  
David Culver  
By his Attorneys,  
Myers & Co

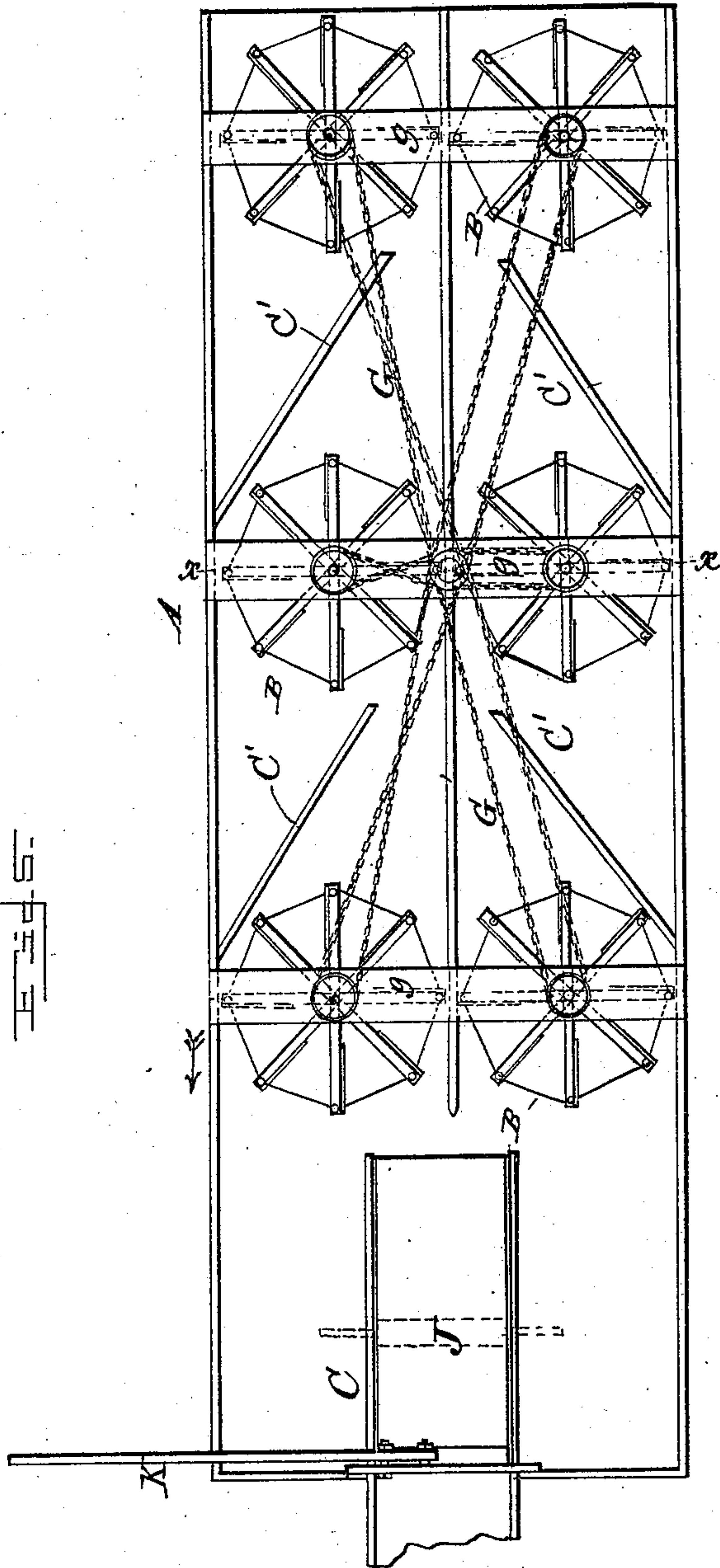
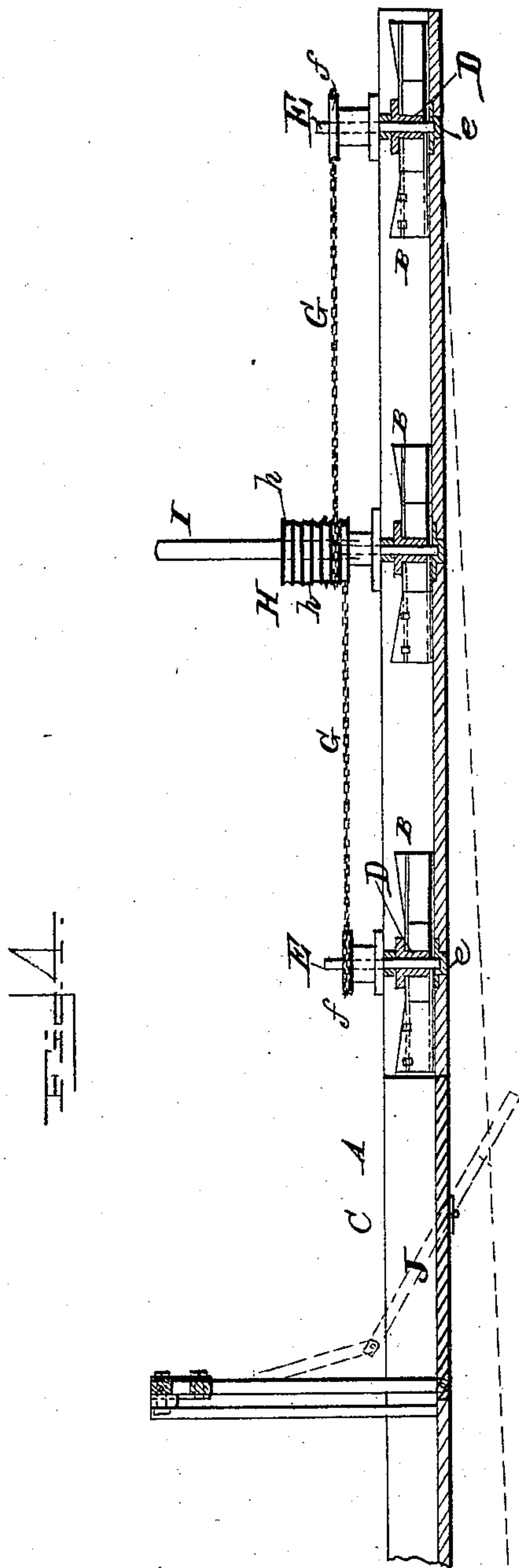
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# UNITED STATES PATENT OFFICE.

DAVID CULVER, OF WILKES-BARRÉ, PENNSYLVANIA.

## WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 456,402, dated July 21, 1891.

Application filed November 13, 1890. Serial No. 371,379. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID CULVER, a citizen of the United States of America, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Water-Wheels, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements in water-wheel powers; and it consists in the novel construction and combination of parts, as hereinafter disclosed.

In the accompanying drawings, Figure 1 is a plan view of a wheel of my improved water-wheel power. Fig. 2 is an edge view of the same, partly broken away and partly in section. Fig. 3 is a sectional elevation of Fig. 5, looking in the direction of the arrow. Fig. 4 is a longitudinal section of my improved water-wheel power, and Fig. 5 is a plan view of the same.

In the embodiment of my invention I provide a flume A, having its bottom *a* inclined on each side of and toward its center transversely, thus giving said bottom a double incline, and in this flume I arrange water-wheels B B, six being shown; but any number may be used. The flume A is also provided with a chute or conductor C near one end, and is adapted to conduct the water let into it from any suitable source or head to the wheels B. The double inclined bottom *a* throws the water toward the peripheries of wheels and the center of the flume to render more effective its action upon the paddles of the wheels, as will more fully appear further on.

The flume A has a central longitudinal partition *b*, dividing it off into two compartments, each containing an equal number of wheels B, the action of opposite wheels upon the water thus being prevented from interfering with each other and at the same time permitting each wheel to have an equal depth of submergence. Also secured in flume A are a series of edgewise-disposed boards or deflectors C' C', so arranged as to cause the discharge of the water, leaving one wheel to impinge or act upon the supply side of the next wheel.

The wheels B B are provided with paddles B' B', hung or pivoted in position upon the

upper series of the radial spokes *c* thereof, so as to depend therefrom and rest near their lower edges against the lower series of the spokes, and thus receive the impact or action of the water for propelling the wheels. The paddles, being hinged or pivoted, are adapted, after the action of the water has expended its force against the same, to swing upward at the discharge side of the wheels, and thus prevent offering any resistance to the water at the latter point. The spokes *c* are bolted at their inner ends to the flanges *d* of a central hub D, while the individual spokes of each pair are bolted together and to peripheral rod-braces D', the bolts also passing through eyes at the ends of said rods and through sleeves *d'* interposed between said spokes.

The shafts E of the wheels B, passing through the hubs D thereof, are stepped or bear at their lower ends in preferably chilled metal sockets *e*, countersunk and secured in the bottom of flume A, the said shafts also passing up through cross-bars *g g*, and spools or pulleys *f*, resting upon said bars, themselves resting and secured upon the top edges of the sides of the flume. Around all the pulleys *f* are passed chain belts G, also engaging a series of circumferential grooves *h* of a common spool-like pulley H, fast upon a shaft I, secured upon the central one of the cross-bars *g g*.

The shaft I, which is designed to extend into an upper closure or room where connection may be made therewith for transmitting its power to the machinery to be driven, it will be seen, receives the combined driving-power of all the wheels B, thereby producing a powerful and efficient motor.

J is a valve consisting of a board pivoted or hung about centrally in a corresponding opening in the bottom of the chute C and adapted to be opened and closed by a hand-lever K, pivoted to the cross-piece of the upright frame *k*, secured at one end of the chute C, said lever being linked, as at *e*, about centrally to a cross-bar *m*, connected at its ends by rods *n n* to the chute or valve J. It will therefore be seen that when the valve J is closed or flush with the bottom of the chute C the water entering the latter will pass to the wheels B; but by opening said valve, ef-

fectured by pulling downward upon the lever K, the water will be diverted from said wheels, passing down through the chute-opening and be deflected forward under the flume by the  
5 valve, as may be desired.

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

10 The water-wheel motor having a series of water-wheels arranged in a flume having a double-inclined bottom and a central longitudinal edgewise-disposed board or partition, and the inclined edgewise-arranged boards

adapted to direct the water from one series of wheels to another, the diverging ends 15 thereof directing the water from the discharging side thereof to the supply or receiving side of the wheels, substantially as described, and for the purpose set forth.

In testimony whereof I affix my signature in 20 presence of two witnesses.

DAVID CULVER.

Witnesses:

W. A. O'NEILL,  
PHILIP O'NEILL.