(No Model.)

E. N. ANDREWS.

WATER WHEEL.

No. 505,342. Patented Sept. 19, 1893.

Fig 1

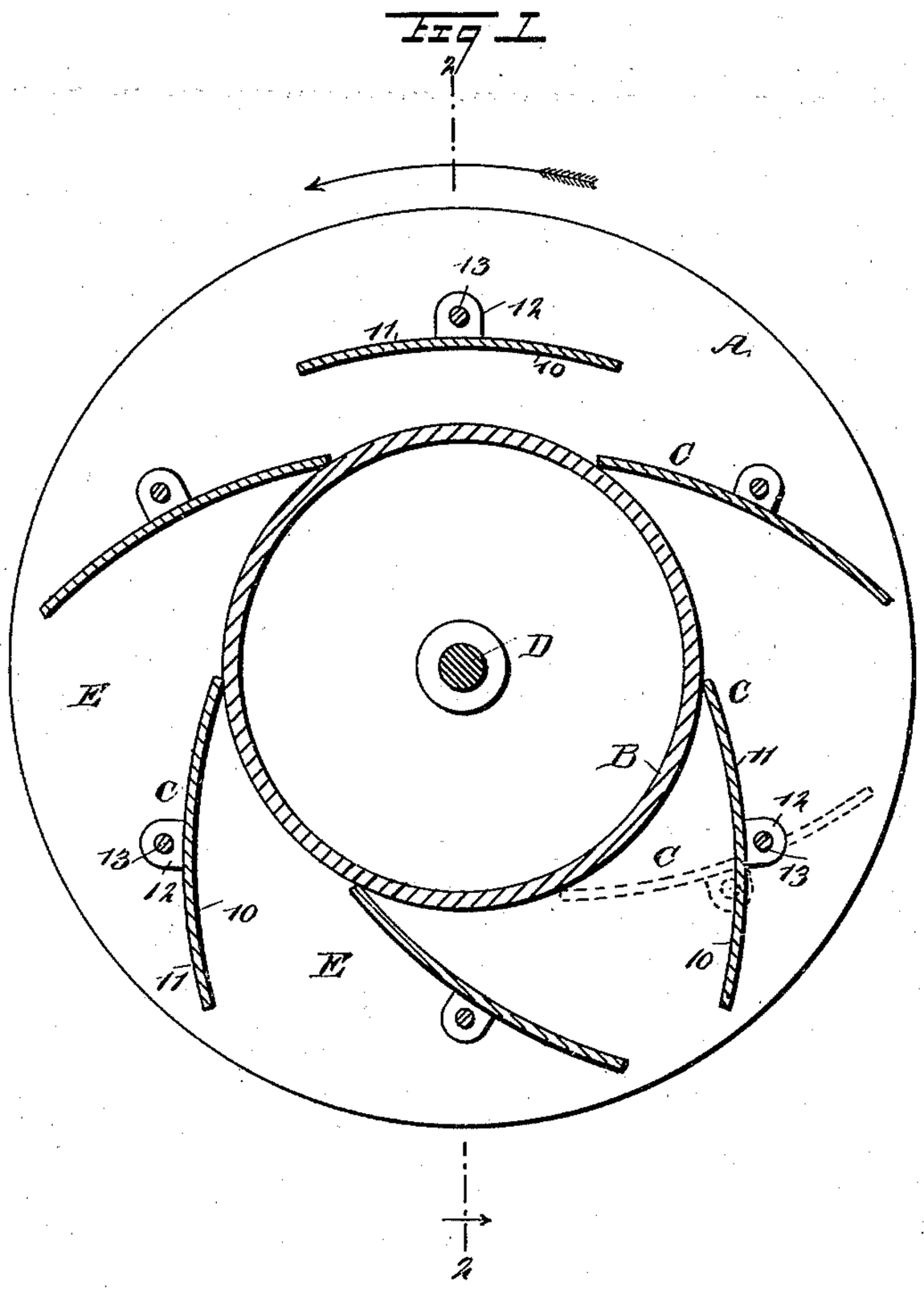
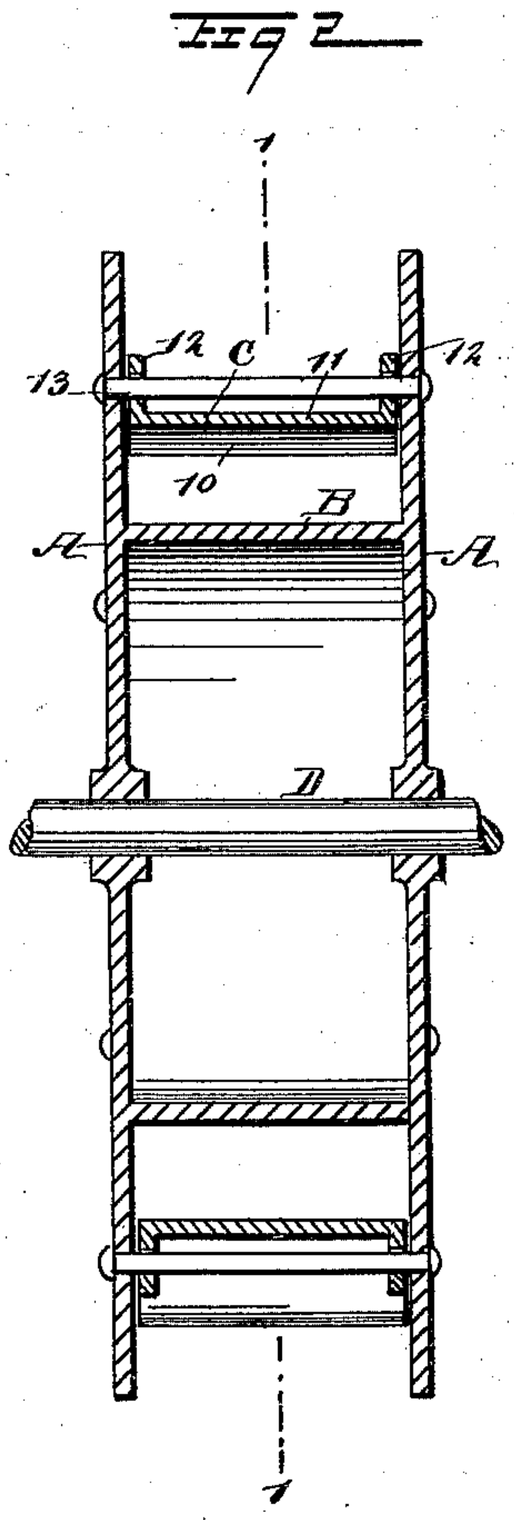


Fig 2



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EDWARD N. ANDREWS, OF NEW BRITAIN, ASSIGNOR TO HIMSELF, AND GEORGE A. COLES, OF MIDDLETOWN, CONNECTICUT.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 505,342, dated September 19, 1893.

Application filed April 1, 1893. Serial No. 468,714. (No model.)

To all whom it may concern:

Be it known that I, EDWARD N. ANDREWS, of New Britain, in the county of Hartford and State of Connecticut, have invented a new and Improved Water-Wheel, of which the following is a full, clear, and exact description.

My invention relates to an improvement in water wheels, and especially to an improvement in paddle wheels, and it has for its object to provide a wheel in which the paddles will be balanced and will be self-reversing, and so combined and adjusted that when they are in propelling position, forward or backward compartments will be formed between the paddles and the body of the wheel, confining the water therein, thereby imparting a maximum pressure until the paddles are carried upward by the upward turn of the wheels, at which time, or about the time they leave the water, the paddles will reverse themselves and discharge the water confined in the compartments, thus relieving the wheel from weight and pressure of water on its upward course.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in both the views.

Figure 1 is a vertical section taken through the wheel, practically on the line 1—1 of Fig. 2; and Fig. 2 is a section taken through a wheel at a right angle to the section shown in Fig. 1 and upon the line 2—2 of Fig. 1.

In carrying out the invention the paddle wheel consists of two sides A, a circumferential partition B located between the sides, beyond which partition the sides extend, and paddles C, pivoted between the sides around said partition. The wheel is mounted to turn upon or with an axle D, the axle passing through the central portion of the wheel. As has heretofore been stated the sides A, extend beyond the outer face of the partition, the distance that the sides extend from the partition being regulated by the size and purposes of the wheel to be constructed.

The paddles C, are preferably made of a single piece of metal or other material, or they are integrally constructed. The paddles are adapted to extend from one side to the other of the wheel, and are concaved upon one face and convexed upon the other, the concaved faces being designated as 10 and the convexed faces as 11; and the concaved faces of the paddles likewise face in the direction of the center of the wheel. Each paddle at each end is preferably provided with a lug or ear 12, and the pivot pins 13 of the paddles are passed through these lugs or ears and through the sides of the wheel, as illustrated in Fig. 2. The paddles are pivoted concentrically with respect to the partition and the axle D; their pivot points are therefore circularly arranged, and the paddles are a sufficient distance apart to enable each paddle to reverse without conflicting with the paddles at each side of it; and furthermore, each paddle is so pivoted that one of its ends will be capable of resting upon the outer surface of the partition. Thus, in operation, when the wheel is turned in the direction of the arrow shown in Fig. 1, or in the opposite direction, the uppermost paddle will be practically in a horizontal position. The next paddle upon the descending side of the wheel will rest at its inner end upon the partition, and will assume a diagonal position, extending downward and outward from the partition, while the next lower paddle upon the said side will also engage at its inner end with the partition, and will have assumed a much more decidedly downwardly inclined diagonal position, and by this means a pocket E, is produced between the upper and next lower diagonally located paddles, the partition forming the back of the pocket, the paddles, the top and bottom walls and the sides of the wheel, its side walls. A similar pocket will be formed between the lower wall of the upper pocket and the lowermost paddle, and the water filling this pocket will exert a maximum pressure upon the wheel in its downward course; but as soon as the lower paddle, for example, commences to be carried upward, and shortly after it has passed its

lowermost point and about the time that it is to leave the water, the lower paddle will reverse from the position shown in dotted lines in Fig. 1 to that illustrated in full lines, thereby spilling all the water contained in the particular pocket of which that paddle forms a part, and the wheel upon its ascending side will therefore immediately be freed from the weight and pressure of the water that had been utilized upon the descending side.

This wheel is exceedingly simple and it is capable of being used wherever a water wheel or paddle wheel is to be employed. The paddles are pivoted at their centers and are perfectly balanced on their pivots; therefore they are self-reversing and entirely automatic in their action.

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

1. A paddle wheel, the same consisting of a circumferential partition, solid sides projected beyond the outer face of the partition, and paddles pivoted between the sides around the partition, as and for the purpose specified.

2. A paddle wheel, the same consisting of solid sides and a circumferential partition connected with the sides, and self-reversing balanced paddles pivoted between the sides and around the partition, as and for the purpose specified.

3. In a paddle wheel, the combination, with a body comprising solid sides and a circumferential partition connecting the sides, of paddles having one face concaved and the other convexed, said paddles being balanced and pivoted between the sides around the partition the inner ends of the paddles being capable of contact with the partition, as and for the purpose set forth.

4. In a paddle wheel, the combination, with a body comprising solid sides and a circumferential partition connecting the sides, the sides extending beyond the circumferential partition, of a series of balanced paddles pivoted between the sides around the partition, the paddles being concentrically located, one independent of the other, and the position of the paddles being such that their inner ends may be engaged with the outer face of the partition, as and for the purpose specified.

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Witnesses:
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