No. 870,586. PATENTED NOV. 12, 1907.

F. E. RENICK.

WATER WHEEL.

APPLICATION FILED MAY 16, 1907.

Fig. 1.

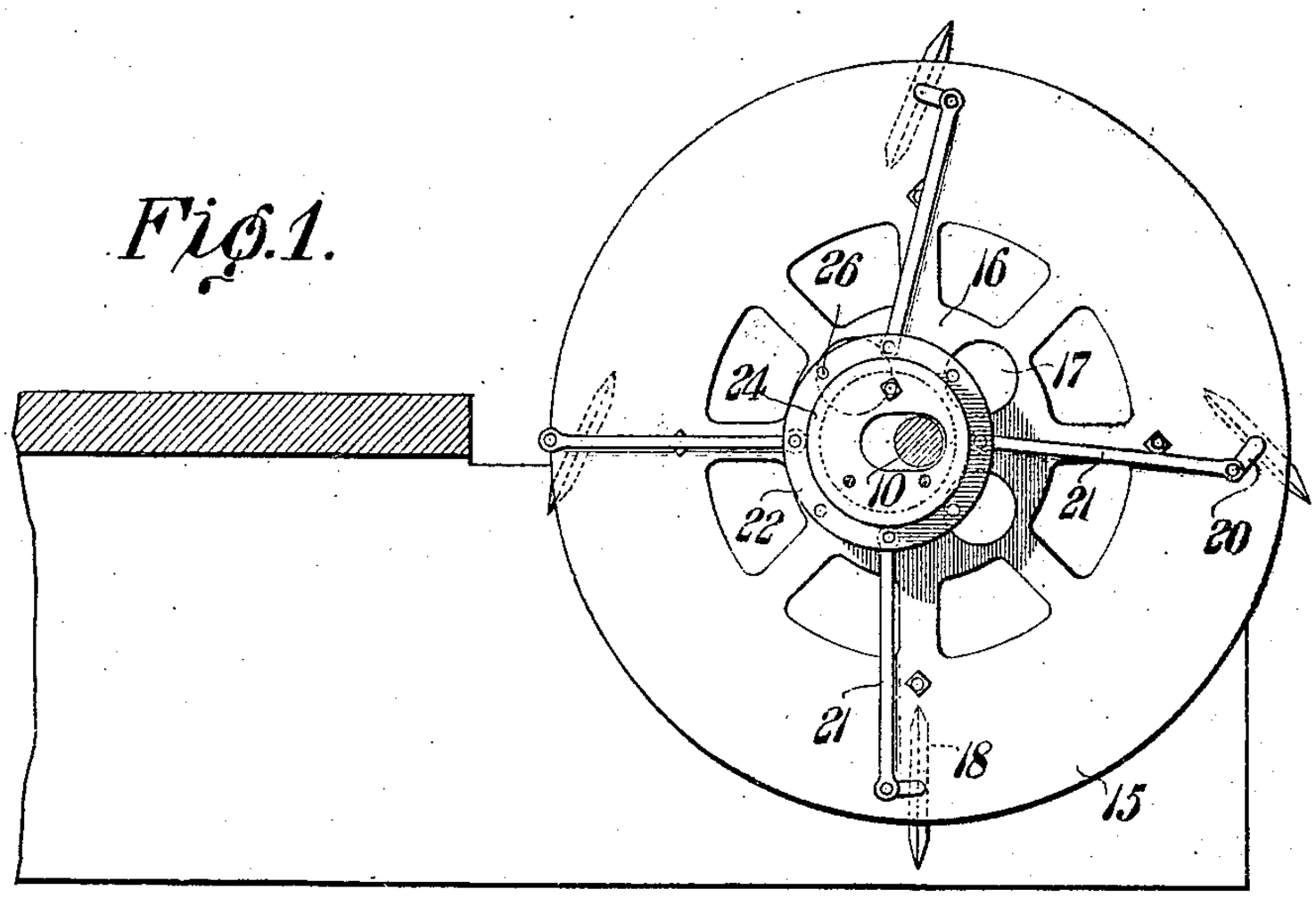

Fig. 2.

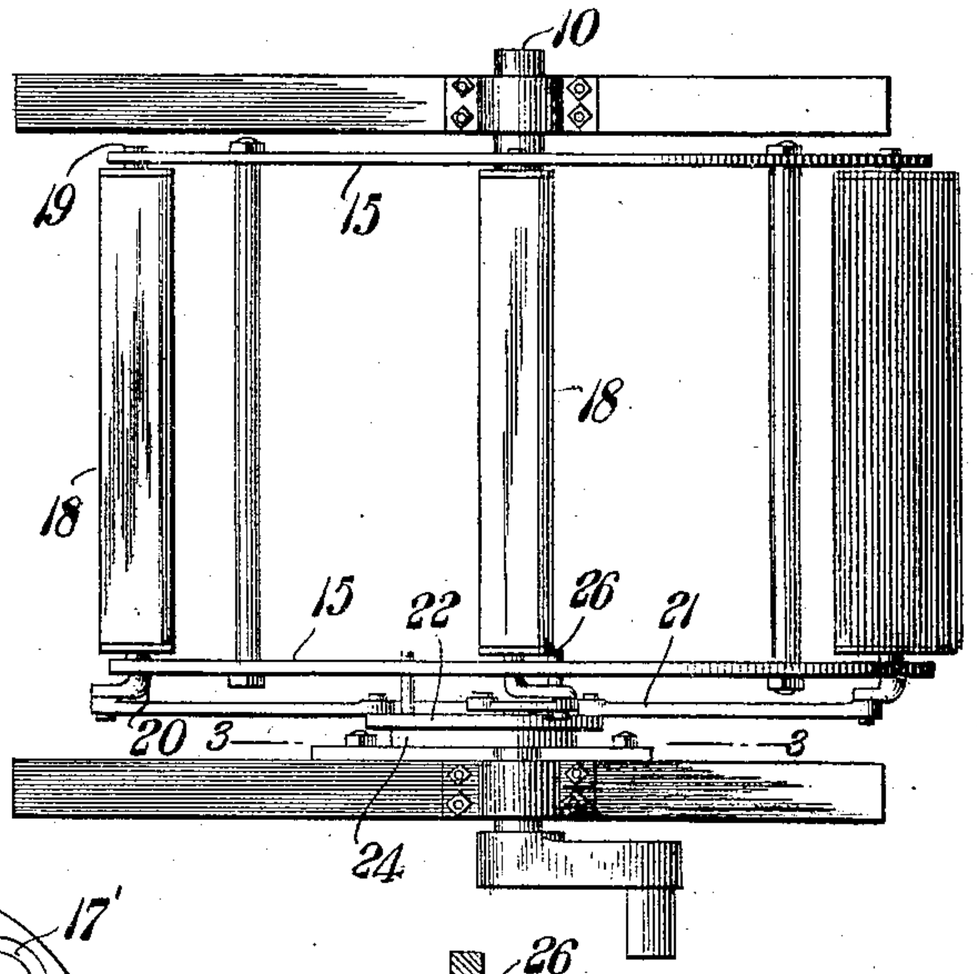

Fig. 3.

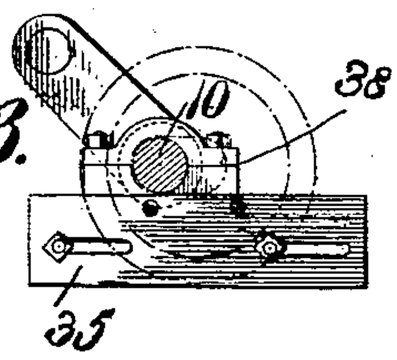

Fig. 4.

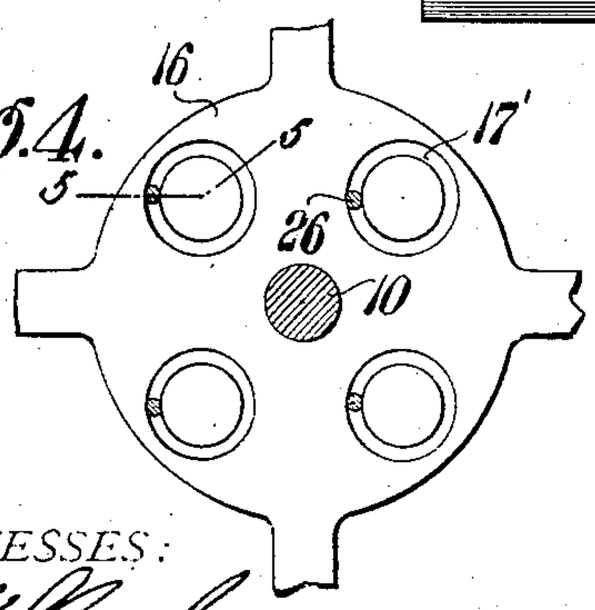

Fig. 5.

WITNESSES:

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FREDERICK E. RENICK, OF MAMMOTH SPRING, ARKANSAS.

WATER-WHEEL.

No. 870,586. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed May 16, 1907. Serial No. 373,892.

To all whom it may concern:

Be it known that I, FREDERICK E. RENICK, a citizen of the United States, residing at Mammoth Spring, in the county of Fulton and State of Arkansas, have invented a new and useful Water-Wheel, of which the following is a specification.

This invention relates to that class of devices known as feathering paddle wheels, and has for its principal object to provide an improved means for transmitting movement to and regulating the position of the paddles.

A further object of the invention is to provide a device of this class in which movement is transmitted directly from the paddle wheel to the blade carriers to effect proper timing of the same in accordance with the rotative movement of the wheel.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a side elevation of a feathering paddle wheel constructed in accordance with the invention, the shaft being shown in section. Fig. 2 is a plan view of the same. Fig. 3 is a detail sectional view on the line 3—3 of Fig. 2. Fig. 4 is a side elevation of the central portion of the wheel showing a slight modification. Fig. 5 is a detail sectional view on the line 5—5 of Fig. 4.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In carrying out the invention, the paddle wheel shaft 10 is mounted in suitable bearings of any ordinary construction and is connected in the usual manner to the engine or other motor element. To the shaft is secured a pair of rings or disks 15, which may be solid or spoked, as desired, and at the center of each disk is a hub member 16 that is provided with a number of equi-distantly spaced openings 17 arranged in an annular series around the shaft.

The blades 18 are mounted on shafts 19 that extend between and through the two disks, and at one or both ends of said shaft are small rocker arms 20 that are connected by links 21 to a ring 22, the connections being pivotal in all cases.

Rigidly secured to the fixed frame is an eccentric 24, the throw of the eccentric, or the difference between the maximum or minimum radii being equal to the diameter of each opening 17. This eccentric carries a loose ring 22, suitable provision being made for preventing any lateral play of said ring with respect to the eccentric.

Extending from the ring are a number of studs or anti-friction rollers 26 that enter the openings 17, and are engaged by the walls of said openings, so that as the disks 15 revolve, the walls of the openings will engage with the studs, and will carry the ring 22 around at a speed equal to that of the wheel proper. During the rotative movement of the disk, the wall of each opening will be in engagement with the stud 26 for approximately one half of the revolution of the paddle wheel, that is to say, during this portion of the movement of the paddle wheel there will be a positive driving action of the stud, while during the remaining half revolution there will be active transmission of power from the disk to the stud, although at least half the number of studs are always being positively driven and effective rotation of the ring is assured.

In the construction shown in Figs. 3 and 4 grooves 17′ are substituted for the openings 17, and the studs fit within these grooves. In this case there is positive movement during all portions of the revolution of the wheel, the outer wall of the groove acting during one half of the revolution, and the inner wall during the remaining half of the revolution.

The construction is such that the paddle will always be properly presented to the water in a direction to secure the most effective action and to be immersed in and emerged from the water with the least resistance.

In order to permit adjustment of the position of the eccentric, the disk 24 is carried by a bar 35 which may be adjusted in a direction at right angles to the longitudinal axis of the paddle wheel shaft for the purpose of varying the eccentricity of the disk, and thus varying the extent to which the blades are moved during the feathering operation. This adjustment likewise permits take up for wear when necessary. In order to permit this adjustment, the eccentric disk is provided with an elongated slot 38 for the passage of the shaft.

I claim:—

1. The combination in a feathering paddle wheel, of end disks, blades, shafts revolubly mounted in said disks and carrying the blades and provided with rocker arms, a revoluble ring mounted eccentrically to the axis of rotation of the wheel, studs extending from said ring and having constantly changing points of contact with said wheel, and means for connecting the ring to the rocker arms.

2. The combination in a feathering paddle wheel, of end disks, blades, shafts revolubly mounted in said disks and carrying the blades, rocker arms on the shafts, a revoluble ring mounted eccentrically to the axis of rotation of the wheel, a plurality of studs projecting from said ring, one of the disks being recessed for the reception of the studs,

and the walls of said recesses transmitting rotative movement to the ring through said studs, and means for connecting the ring to the rocker arms.

3. The combination in a feathering paddle wheel, of end disks, blades, shafts revolubly mounted in said disks and carrying the blades, rocker arms on the shafts, a disk mounted eccentrically to the axis of rotation of the wheel, a revoluble ring mounted on said disk, studs projecting from the ring, one of the disks having openings for the reception of the studs, and links connecting the ring to the rocker arms.

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

FREDERICK E. RENICK.

Witnesses:
JNO. E. PARKER,
WM. J. NEALE.