

H. WILLIAMS.

FEATHERING PADDLE-WHEELS.

No. 189,164.

Patented April 3, 1877.

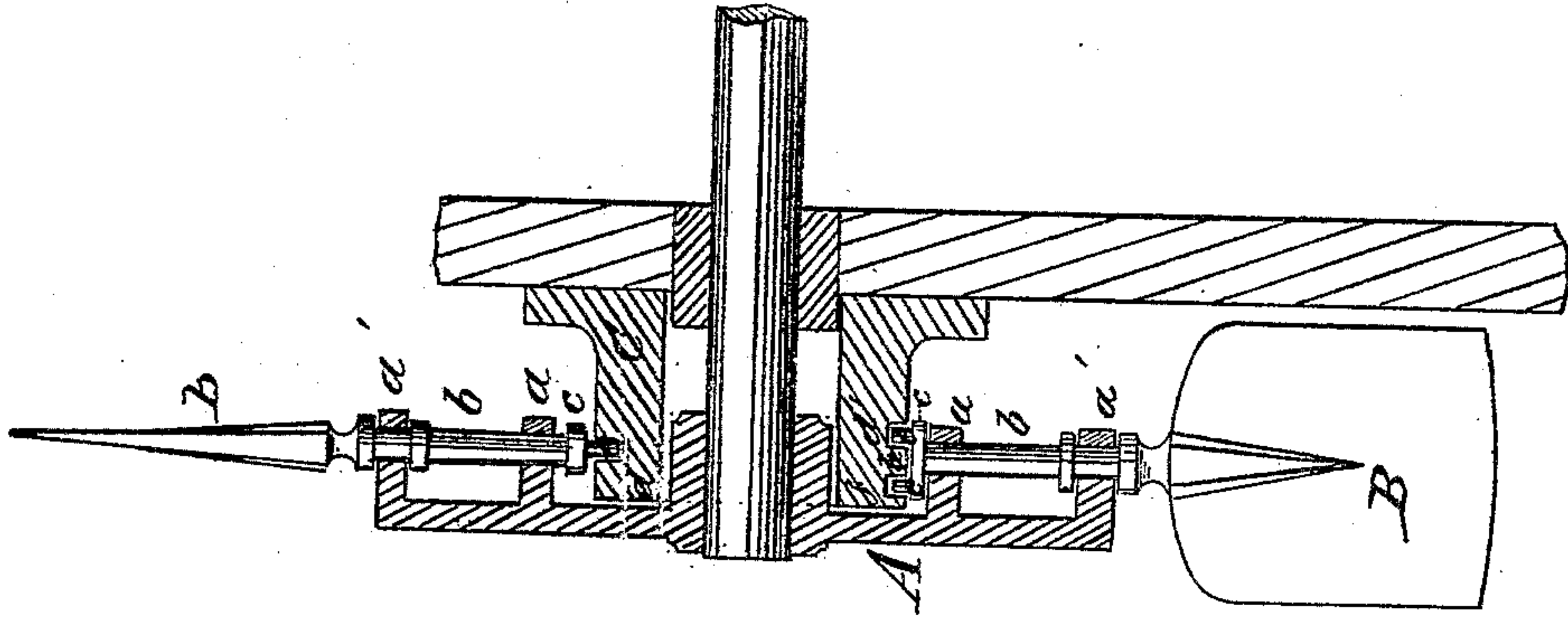


Fig. 2.

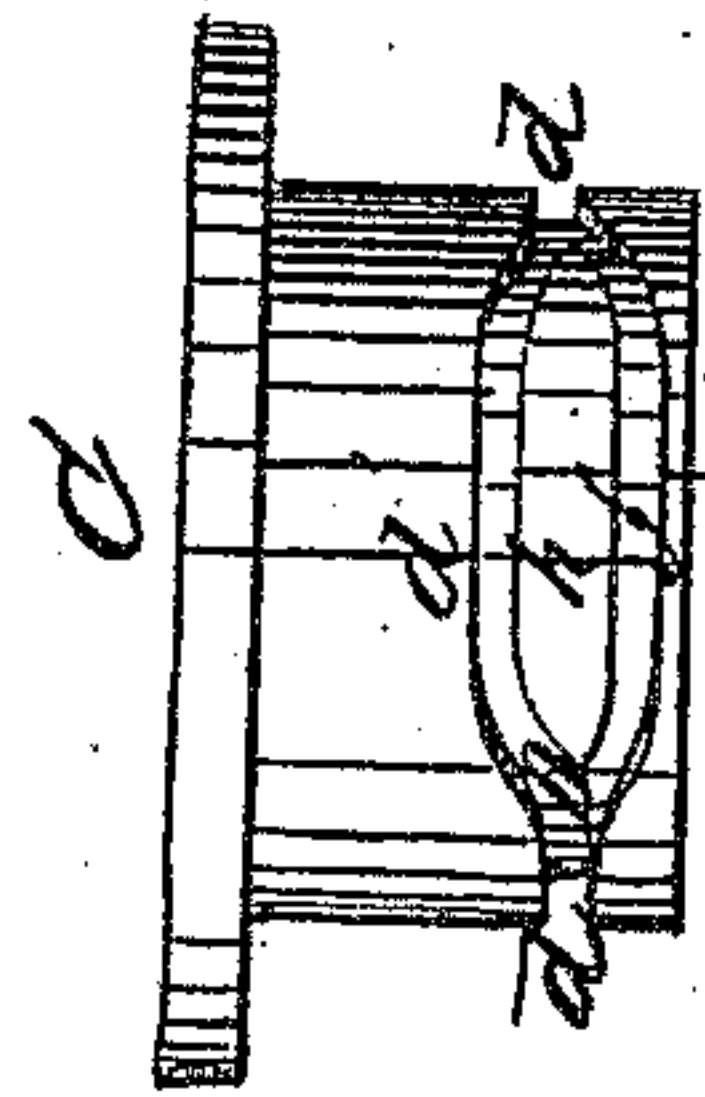
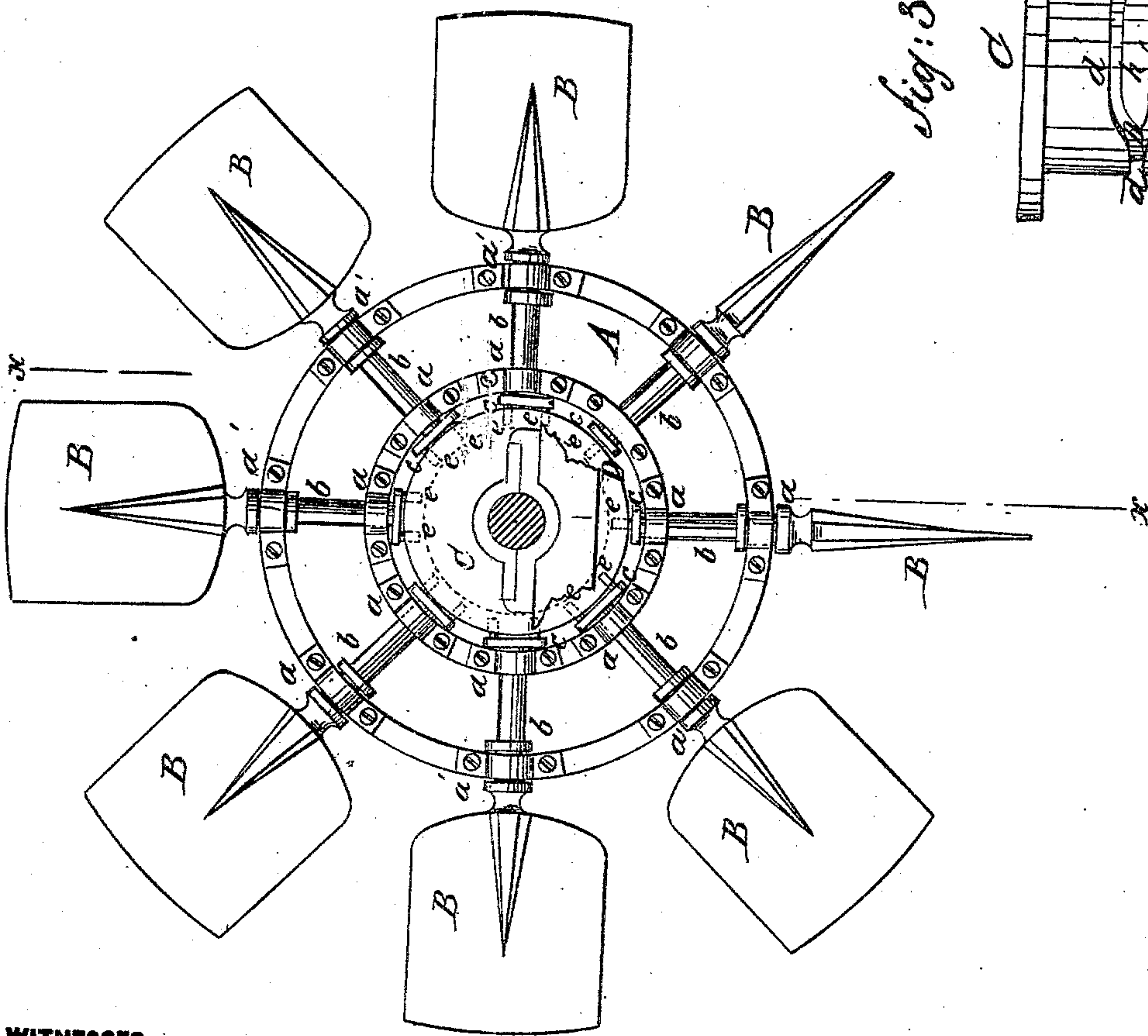


Fig. 3.

WITNESSES:

C. V. Williams

Fig. 1.

INVENTOR

H. Williams

UNITED STATES PATENT OFFICE

HENRY WILLIAMS, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. **189,164**, dated April 3, 1877; application filed October 7, 1876.

To all whom it may concern:

Be it known that I, HENRY WILLIAMS, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and Improved Feathering Paddle-Wheel, of which the following is a specification:

Figure 1 is a side elevation of my improved paddle-wheel. Fig. 2 is a vertical section on line *x x* in Fig. 1. Fig. 3 is a detail view of the feathering-cam.

Similar letters of reference indicate corresponding parts.

My invention relates to the class of paddle-wheels in which the paddles or floats are feathered in passing into and out of the water; and it consists of a wheel carrying a number of journaled radial arms, having at their outer extremities paddles or floats, which are turned through a quarter of a revolution by T-levers attached to the inner ends of radial arms, which carry a friction roller at each end. These friction-rollers move in a cam of peculiar construction, which turns the T-levers, and consequently the floats or paddles, at the proper instant.

Referring to the drawing, A is a wheel, provided with the journal-boxes *a a'*, in which are placed the radial arms *b*. Paddles or floats B are attached to the outer ends of the arms *b*, and to the inner ends of the said arms T-levers *c* are attached parallel to the plane of the paddles. Friction rollers or pins *e e* are secured in the ends of each of the levers *c*, and project toward the center of the wheel.

A fixed cam, C, is attached to the framing of the vessel, and surrounds the shaft of the wheel. It is provided with a groove, *d*, with

which the rollers or pins *e* engage. The groove *d* is divided into two parts, *d'* and *f*, at D. The part *d'*, being the direct continuation of the groove *d*, receives the foremost pin or roller *e*, and turns it, and consequently the paddle, through a quarter of a revolution, and the part *f* affords space for the pin *e* that follows to turn. The part *h*, intervening between the pins *e*, prevents the paddle from turning while it presents its flat surface to the water. When the pins reach the end of the division they regain their position in the groove *d*, and retain the paddles edgewise or parallel to the plane of rotation of the wheel through the part of the revolution that the paddles make out of the water.

The feathering part of the cam C is placed so that the paddles are turned at right angles to the plane of rotation as they enter the water, but are turned edgewise or parallel to the plane of rotation before they begin to rise in the water.

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

The combination of the stationary cam C, having the double or divided groove *d d'* *f* and intervening solid part *h*, with the wheel A and radial paddles B, provided with inner cross-arms *c*, each having pins or rollers *e*, and moving in the grooves of the cam, as and for the purpose set forth.

HENRY WILLIAMS.

Witnesses:

FRANK X. PEACOCK,
WIGAND SCHENCK.