(No Model.)

M. A. DAVIS.

FEATHERING PADDLE WHEEL.

No. 574,398. Patented Jan. 5, 1897.

Fig. 2.

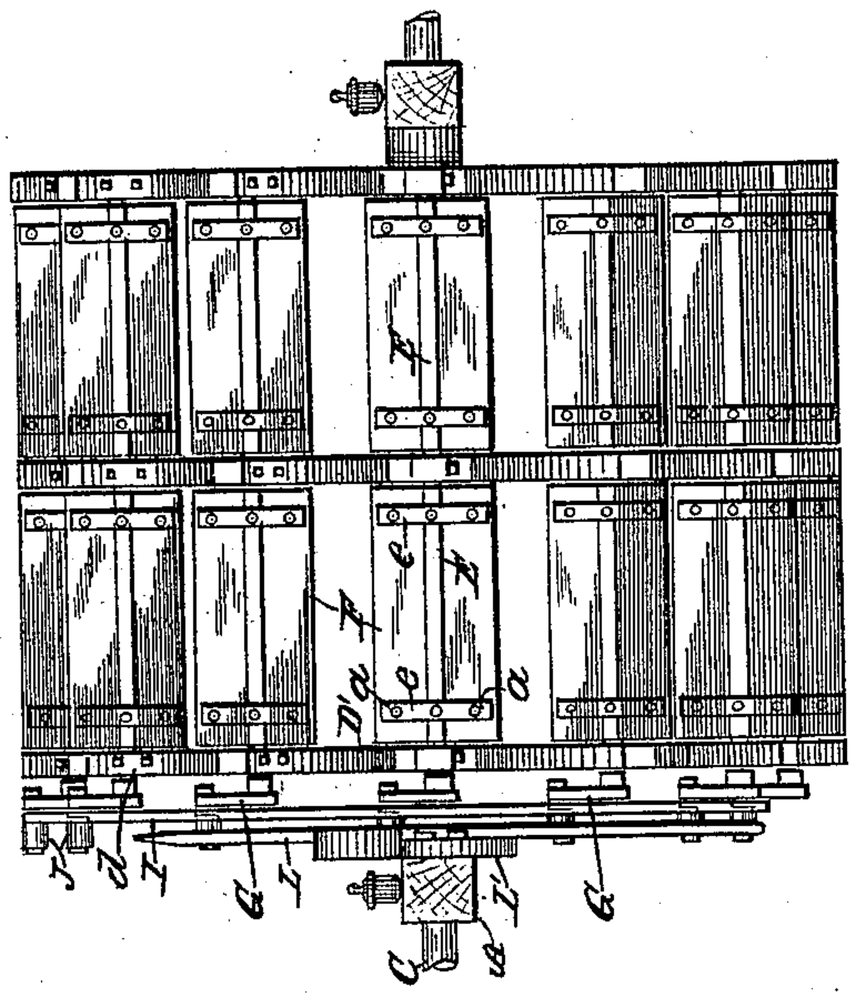


Fig. 4.

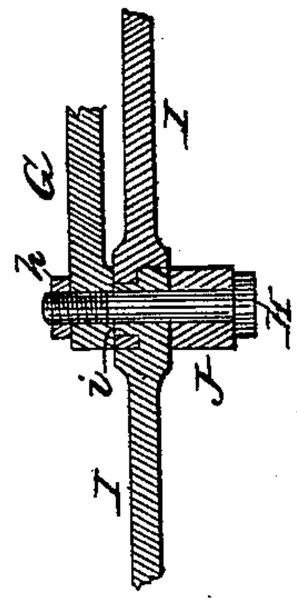


Fig. 1.

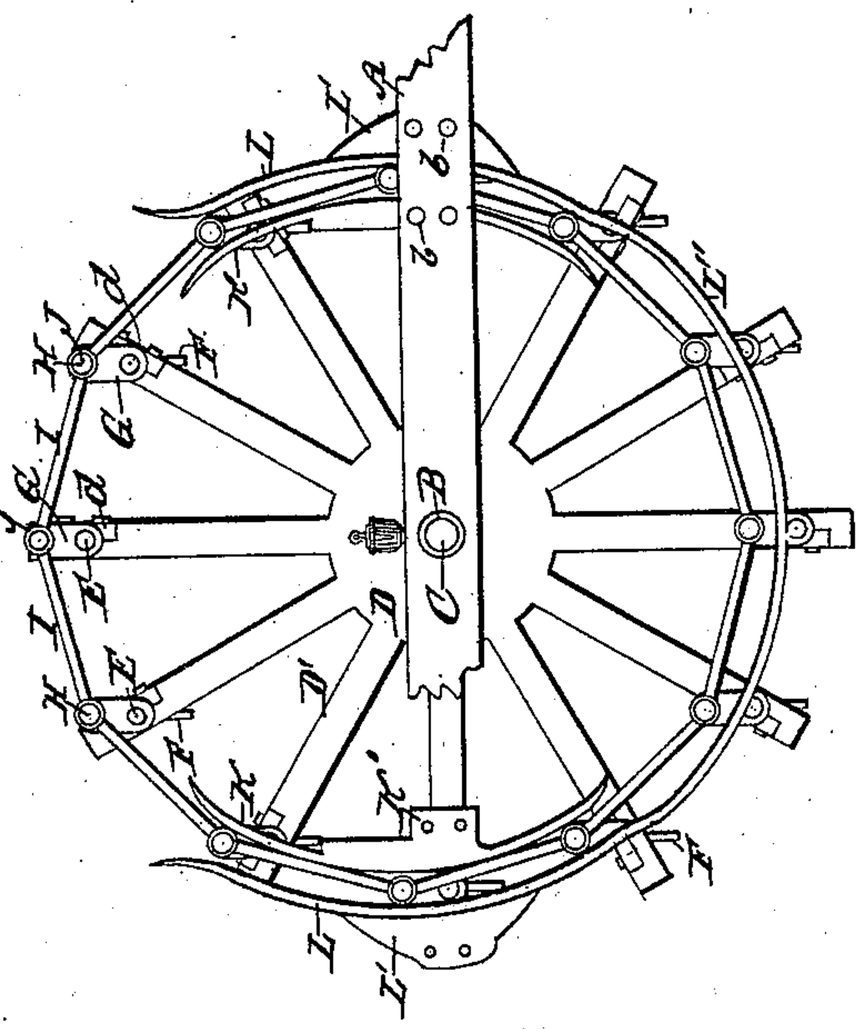
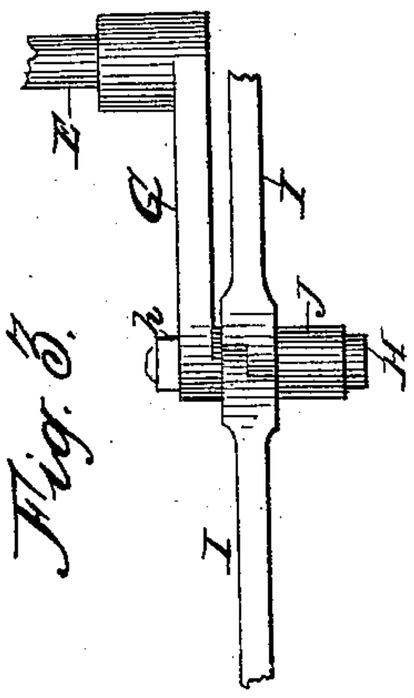


Fig. 3.



Attest.
L. A. St. John.
J. F. Groat.

Inventor
Mary A. Davis
By J. M. St John
Atty.

UNITED STATES PATENT OFFICE.

MARY A. DAVIS, OF SPOKANE, WASHINGTON.

FEATHERING PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 574,398, dated January 5, 1897.

Application filed August 28, 1896. Serial No. 604,227. (No model.)

To all whom it may concern:

Be it known that I, MARY A. DAVIS, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Feathering Paddle-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to feathering paddle-wheels for steamboats; and the object of this invention is to produce a simple and efficient paddle-wheel of this class adapted to perform its functions with a comparatively small amount of friction and no unnecessary displacement of water.

The invention consists in the construction, combination, and arrangement of parts, as will be hereinafter fully set forth and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of a paddle-wheel embodying my invention, a portion of one of the supporting-beams being broken away to show the cams bolted thereto. Fig. 2 is a front or rear elevation of the same. Fig. 3 is a plan view of one of the paddle-cranks and portions of connected links. Fig. 4 is a central longitudinal section of the same.

Similar letters of reference indicate corresponding parts.

A designates a suitable supporting-beam supposed to be attached to the side or stern of a boat. One of these is provided at each side of the wheel, and each has bearings B of any desired construction for the axle C of the paddle-wheel D. This consists of two or more spiders (preferably three) with pivoted paddles or floats F connected to the radial spokes D′ D′ thereof. These paddles are secured rigidly to crank-shafts E E, journaled in bearings *d d* in the respective spokes. A simple and efficient method of fastening them to the shafts is by means of iron straps *e e*, extending nearly or quite across the face of the paddle near each end, with bolts or rivets *a a* passing through the paddles and shafts, as shown in Fig. 2. This also serves to prevent the splitting of the paddles, which are preferably made of wood.

To the projecting ends of the shafts E E (obviously either end, or both, if desired) are secured cranks G G, provided with suitable wrists H H. These wrists are all connected by a series of links I I, which are preferably constructed as shown in Figs. 3 and 4. On the head of one end of each is formed a boss *i*, which fits in a corresponding hole in the adjacent but opposite end of the next link. The wrist H passes through this boss and is preferably screwed into the crank G and secured by a jam-nut *h*.

On the wrist outside of but adjacent to the links I I an antifriction-roller J is mounted on each wrist. These rollers in the revolution of the wheel pass between the guides K and L of a pair of cams mounted at the sides and near the front and rear of the wheel. The cams are practically arcs of a circle, the center of which is just the length of each crank from center to center above the center of the axle or shaft C. The effect of this is to hold all the cranks in a vertical position at all times, so that the paddles, which are parallel with the cranks, enter and leave the water vertically and without any splash or unnecessary resistance. The guides are curved outwardly somewhat at the upper and lower ends, so as to insure the entrance of the rollers J J between them.

The guides are secured to the supporting-beam A by bolts *b b*, passing through flanges K′ and L′, respectively.

A continuation of the outer guide L″, extending from the one to the other at the lower side, serves as a guard for the cranks to prevent obstruction by snags and the like.

In practice it is preferred to extend the spokes D′ D′ outwardly as far as the edges of the paddles extend, so that they thus serve in some degree to protect the paddles against injury.

The linked connection of the paddle-cranks give great ease and freedom of movement to the wheel, even though the utmost accuracy has not been attained as to their length and fitting. So also the form of the cam and the use of antifriction-rollers limit the strain and

friction and a smooth and easy action of the wheel is secured.

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

1. In a feathering paddle-wheel, the combination with spiders having bearings near the ends of their radial arms, crank-shafts journaled therein, with paddles and cranks secured thereto, links connecting the wrists of all the cranks and antifriction-rollers thereon, of cams mounted near the front and rear of the wheel, and adapted to receive said rollers, the cams being practically arcs of a circle, the center of which is the length of each crank above the center of the wheel.

2. In a feathering paddle-wheel, the combination of the paddle-shafts E E, provided with cranks G G, their wrists H H, antifriction-rollers J J, and connecting-links I I, a boss *i* on one link engaging an eye in the other, substantially as and for the purpose set forth.

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

MARY A. DAVIS.

Witnesses:

ABNER BROWN,

CHARLES H. WOLF.