I. A. & E. E. KILMER.

FEATHERING PADDLE-WHEELS

No. 192,921. Patented July 10, 1877.

Fig. 1.

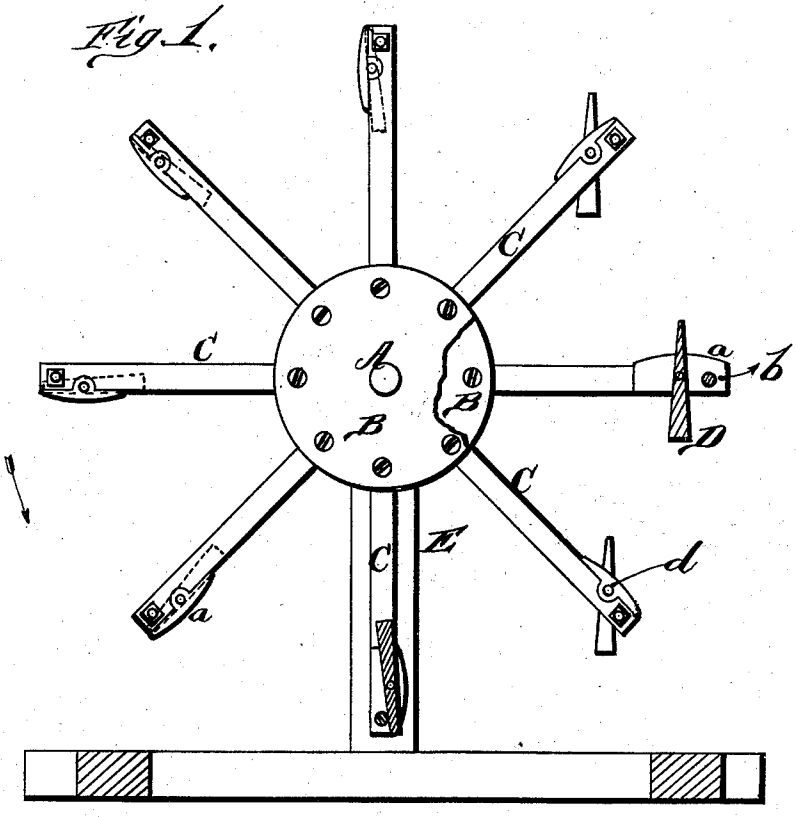


Fig. 2.

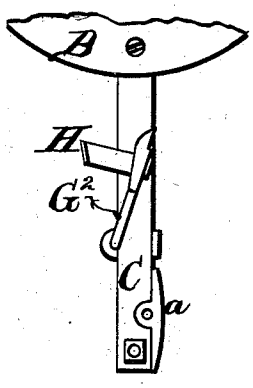


Fig. 3.

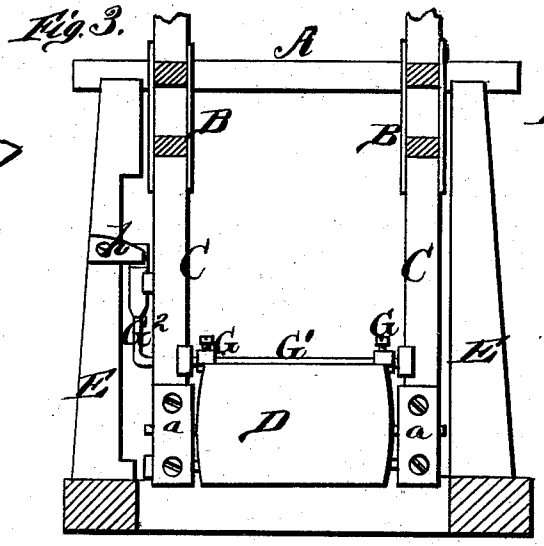


Fig. 4.

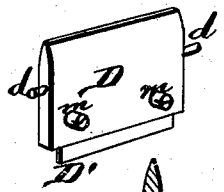


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

IRVING A. KILMER AND ELMER E. KILMER, OF HOWE'S CAVE, NEW YORK, ASSIGNORS OF ONE-THIRD THEIR RIGHT TO AUGUSTUS KILMER, OF SAME PLACE.

IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. **192,921**, dated July 10, 1877; application filed June 23, 1877.

To all whom it may concern:

Be it known that we, IRVING A. KILMER and ELMER E. KILMER, of Howe's Cave, in the county of Schoharie and State of New York, have invented a new and valuable Improvement in Wheels for Boats; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a part sectional side elevation of our wheel for boats. Fig. 2 is a detail view. Fig. 3 is a vertical sectional detail view; and Figs. 4 and 5 are details of the same.

The nature of our invention consists in the construction and arrangement of a paddle-wheel, as will be hereinafter more fully set forth.

The annexed drawings, to which reference is made, fully illustrate our invention.

A represents the center shaft, to which the power is applied, and which is placed and rotates in suitable bearings upon standards E E. On this shaft are secured two wheels, B B, at suitable distances apart, from each of which extend a series of radial arms, C C, at any desired length and at equal distances apart.

To these arms are secured suitable boxes *a a*, in which are placed gudgeons *d d* projecting from paddles D D, said paddles being placed between the corresponding arms of the two sets, as shown.

The paddles D are made of about the same thickness throughout, but one edge is made sharp by beveling one or both sides of the paddle, and the gudgeons *d d* are located, or project from the ends of the paddles, closer to this edge of the paddle, so that the other side will present a larger surface to the action of the water than the side that has the sharp edge.

Through the ends of the arms C beyond the boxes *a* are passed rods *b*, as shown, to form stops for the motion of the paddles when the paddle-wheel is in motion in the right direction.

The paddles D, as they enter the water, are held parallel with the arms C by the lighter sides of the paddles being held below and against the rods *b* by the excess of weight of the heavier ends of the paddles.

The paddles remain in this position until they have passed the vertical line from the center shaft A, when the heavier end of the paddle presenting a larger surface to the water than the lighter end, the paddle will turn on its journals and pass upward out of the water with the sharp edge first. It will be noticed that each paddle, as it enters the water, has its heavier end inward and the lighter end outward, and a positive resistance to the water is afforded by the rod *b* independent of the gravity of the paddle, which is only made use of to keep the paddle against said rod, and afterward to reverse the paddle, as above described.

To still further insure the proper working of the paddles, each paddle is, so to say, locked in position by means of shouldered arms G G attached to a shaft, G^1, as soon as they pass the upper vertical line from the shaft A. One end of this shaft is provided with a weighted crank-arm, G^2, which throws the shouldered arms or catches G^1 into proper position at the proper time to bear against the inner heavier end of the paddle to lock and hold the same in position for entering the water.

When the paddle passes the lower vertical line from the shaft A, a pivoted latch, *h*, on one of the supports E takes hold of the crank-arm G^2, thereby turning the shaft G^1, so as to withdraw the catches G from the paddle, and allow the same to turn, as required, by its own gravity.

On the arm C is a suitable guide, H, for limiting the movement of the crank-arm G^2.

When it would be desirable to regulate the force of the paddles, each paddle is provided with an extensible blade, D′, sliding lengthwise in the heavier end of the paddle, and such blade held at any point desired by means of set-screws *m m*, or any other suitable or convenient fastening.

It will readily be understood that the farther these blades are extended beyond the paddles

the greater surface they have to act on the water, and hence their power is correspondingly increased.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a paddle-wheel, the paddle D, hung upon gudgeons on one side of the center in the arms C, in combination with the stop-rods *b* outside of the pivots of the paddles, the several parts being so arranged that when the paddles enter the water, when the wheel is moving forward, their outer smaller sides will be held against the front of the stop-rods by the gravity of their inner larger sides, and a positive resistance formed against the water, substantially as set forth.

2. In combination with the reversible paddles D, the shouldered arms or catches G, shaft G^1, weighted crank-arm G^2, and latch *h*, substantially as and for the purposes herein-set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

IRVING A. KILMER.
ELMER E. KILMER.

Witnesses:
DAVID H. RICKARD,
JACOB ENDUS.