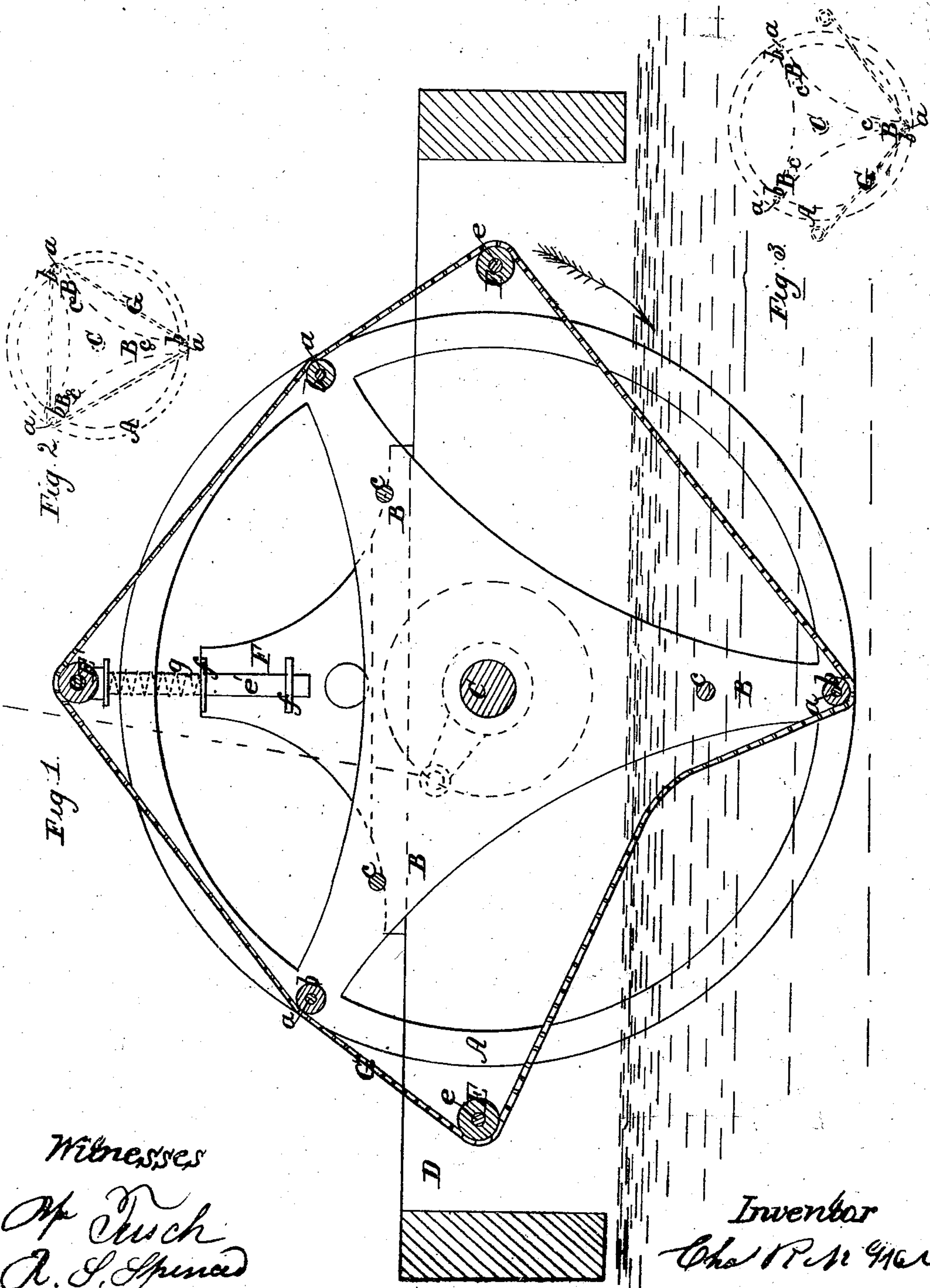


C. R. M. Wall.
Paddle Wheel.

N^o 24,069.

Patented May 17, 1859.



Witnesses
W. T. Tuck
R. S. Spruce

Inventor
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UNITED STATES PATENT OFFICE.

CHARLES R. M. WALL, OF NEW YORK, N. Y.

PROPELLER.

Specification of Letters Patent No. 24,069, dated May 17, 1859.

To all whom it may concern:

Be it known that I, CHARLES R. M. WALL, of the city, county, and State of New York, have invented a new and Improved Propeller; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1, represents a vertical section of my propeller taken transversely through the crank shaft. Figs. 2 and 3 are modifications of the same.

Similar letters of reference in the three views indicate corresponding parts.

This invention consists in arranging one or more elastic and water tight bands or aprons in such relation to a wheel with suitable rollers and stops that when the wheel is rotated the combined action of these rollers and of the water causes the apron to sag in and to assume such a position that it acts very effectively in propelling the boat without raising any back water.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A represents a wheel constructed out of two or more rings which are supported by three or more arms B, and which are united by cross-bars a, on which friction rollers b are made to rotate freely, and bars or braces c serve the double purpose of strengthening the wheel and of preventing the apron from sagging in too much, which will be presently explained. This wheel is secured to the crank shaft C, which has its bearings in the frame work D, and which is operated by a steam engine, or by some other suitable motive power, in the usual manner.

Beyond the wheel A, and secured in the frame D, are the rollers E and E', which turn freely on bars e so that they offer as little friction as possible. Two of these rollers E are situated on a line drawn in a horizontal direction through the center of the wheel, and the roller E', has its bearings in the upper ends of rods e', which are guided in ears f which are attached to standards F, and spiral springs g force the rods e' together with the roller E' upward. These rollers E, as well as the roller E', extend

over the whole width of the wheel A, and one or more bands or aprons G are stretched over these rollers E, E', and over the rollers b of the wheel, as clearly represented in the drawing, and these aprons may be made full as wide as the space between the rings of the wheel or narrower when desired, and one or more aprons may be used between two rings of the wheel. The several aprons are stretched by the action of the springs g, the strain of which is regulated according to the strength and width of the aprons.

The operation is as follows: When the wheel is rotated in the direction of the arrow, the apron G sags in by the action of the water, as clearly represented in Fig. 1, and it assumes a position in which it can act with the best advantage on the water so as to propel the vessel, to which this wheel is attached, and the stops or braces c prevent the apron from sagging in too deep.

The effect of the apron may be increased by closing the sides of the wheel so that the water contained in the sack of the apron is prevented from escaping on the sides, and that a strong current parallel with the sides of the boat is formed which acts with the best possible effect to propel the same.

A wheel built on this plan not only operates both ways with equal power, but it can also be immersed altogether without deteriorating its power, and the apron assumes a slow rotary motion in the direction of the motion of the wheel so that it wears out equally all around. It is not, however, absolutely necessary to have the rollers E, E', and an apron stretched over the rollers b, in Fig. 2, will have the same effect of propelling the boat; in this case, however, the apron remains stationary, and it will wear out sooner in one place than in the other, and the wheel, if thus constructed, will operate only at a certain dip, and if entirely immersed it will lose its power. It is also not indispensable to have an endless apron, as an apron or band applied as represented in Fig. 3, will operate equally well, but an apron as there represented will be even more liable to be worn out as an apron applied as represented in Fig. 2.

It is obvious that the number of the rollers b, and stops c may be varied at pleasure, and

I do not confine myself to any particular form or number of these arms or of the rollers.

5 This propeller when not used, can easily be brought in such a position that it offers no resistance to the progress of the vessel under sail.

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

10 1. An apron G, arranged in such relation to a wheel A, that it operates to propel a vessel, substantially as described.

2. The arrangement of the rollers E, E',

in combination with the apron G, whereby the wheel is made to work at any dip, substantially as specified. 15

3. The springs g, or their equivalent, arranged in combination with the rollers E', and with the apron G, for the purpose of regulating the strain on the apron substantially as set forth. 20

CHAS. R. M. WALL.

Witnesses:

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R. S. SPENCER.