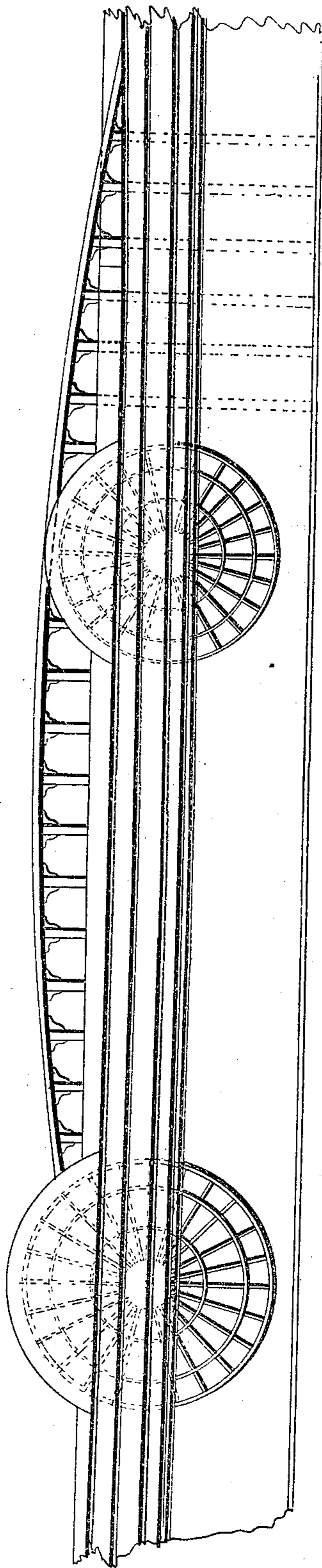


H. Randall.
Paddle Wheel.

N^o 37,421.

Patented Jan. 13, 1863.



Witnesses;
O. H. Moore
Edw. J. Henderson

Inventor;
Henry Randall
by J. P. Balanini
Atty

UNITED STATES PATENT OFFICE.

HENRY RANDALL, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO HIMSELF AND J. P. BALDWIN, OF NEW YORK CITY.

IMPROVED CONSTRUCTION AND LOCATION OF PADDLE-WHEELS.

Specification forming part of Letters Patent No. 37,421, dated January 13, 1863.

To all whom it may concern:

Be it known that I, HENRY RANDALL, at present of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and Improved Arrangement and Combination of Propelling and Motive Power for Steam-Vessels, of which the following specification embraces a full and fair description.

The nature of my invention consists in using the propelling power of steam-vessels in such manner and combination as to gain double the security now realized, and greater speed for the same expenditure of power. To accomplish this I employ two distinct sets of wheels, operated by two separate engines, in separate compartments of the ship, the after pair of wheels being about one-eighth larger, being substantially so much larger than the forward pair as to take up the "slip" of the latter when making the same number of revolutions, and being located, if on a vessel five hundred feet long, about one hundred and thirty feet aft, or in that proportion—so far aft, as to take the water just where it is coming to rest from the impetus it has received from the forward wheels, and where it is about commencing to adhere to, and in a sense drag after, the ship—in other words, commences to be dead water, or water which leaves or parts from the vessel with far less velocity than she advances, she towing it the difference. Thus these paddles, on the one hand, not only have a firm dip, in comparatively smooth water, not running away from them, but, on the other hand, they give the water a fresh impetus, carrying it quickly in, under, and beyond the curve of her run, closing her in with live water, and greatly relieving her from the adhesion or "drag" referred to.

The employment of two distinct sets of propelling apparatus in separate compartments of the ship not only gives her double the safety, (as, in case one set should break down the other set will carry her into port,) but it also secures many other important advantages—such as a distribution of the weight of machinery, coal, &c., about the ship according to its strength and buoyant capacity, which equalizes the strain on the ship in the same

degree and renders accidents less liable. It also gives double the bucket surface or face to act on the water without any increase in the number of engines. This method of applying the power dispenses with masts, spars, and sails also, the use of which are seldom resorted to, except when the machinery is disabled, an event not likely ever to occur when two distinct sets of engines having their distinct sets of wheels to operate are employed. It not only saves a large amount of cost for their construction, wear and tear, and weight, beyond the weight of an extra set of wheels and shaft, but it also saves the employment of a large number of men to attend to and manage them. This arrangement therefore is not only doubly safe and far more effective than the ordinary method of attaching duplicate engines to operate one set of wheels, but it is much more economical, and cannot be too highly estimated.

What I claim as my invention, and desire to secure by Letters Patent, is as follows:

I do not claim the use of four wheels to a steamer, as the plan (simply) is not new; but I claim as a new and useful arrangement their peculiar location in combination with the ship, the engines, and with each other—namely, the application of four wheels (two pairs) when each pair is disconnected from the other, driven by independent engines, and the after pair so much larger than the forward pair as to take up the slip of the latter when making the same number of revolutions, substantially as described, said after pair, moreover, being located at such distance from the other pair as to be in the water made comparatively smooth by the latter, and finally so located in regard to the hull of the ship, and their buckets so arranged, as to throw the water well inward under the "run" of the vessel, and relieve her from the dead or partially-towing water, substantially as described, the whole being for the objects and reasons explained.

HENRY RANDALL.

Witnesses:

W. W. DOUGHERTY,
D. A. KAGLE.