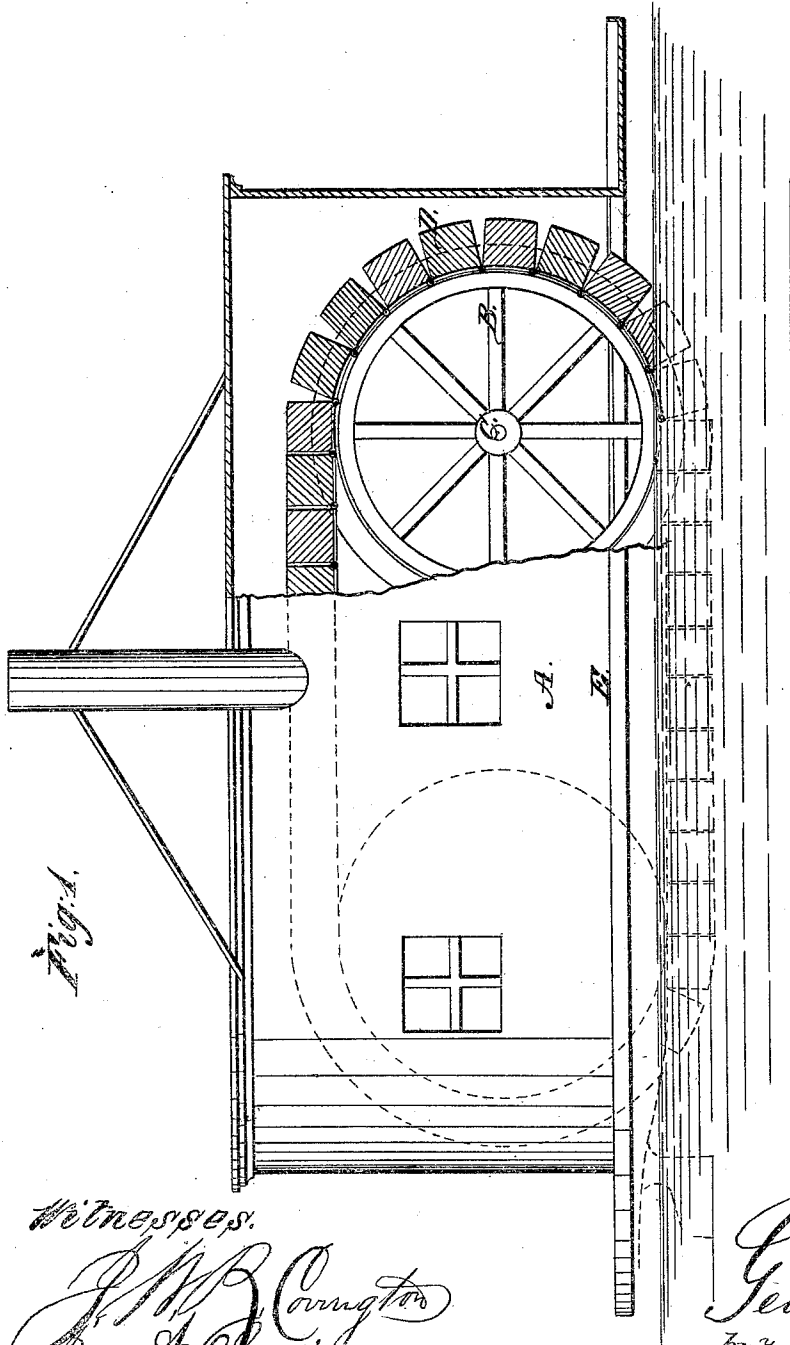


Sheet 1. 3 Sheets.

G. H. Young
Chain Propeller

N^o 56,660.

Patented Jul. 24, 1866.



Witnesses.
J. M. Cornington
As. A. Service

Inventor.
Geo. H. Young
by Wm. & Co. P.

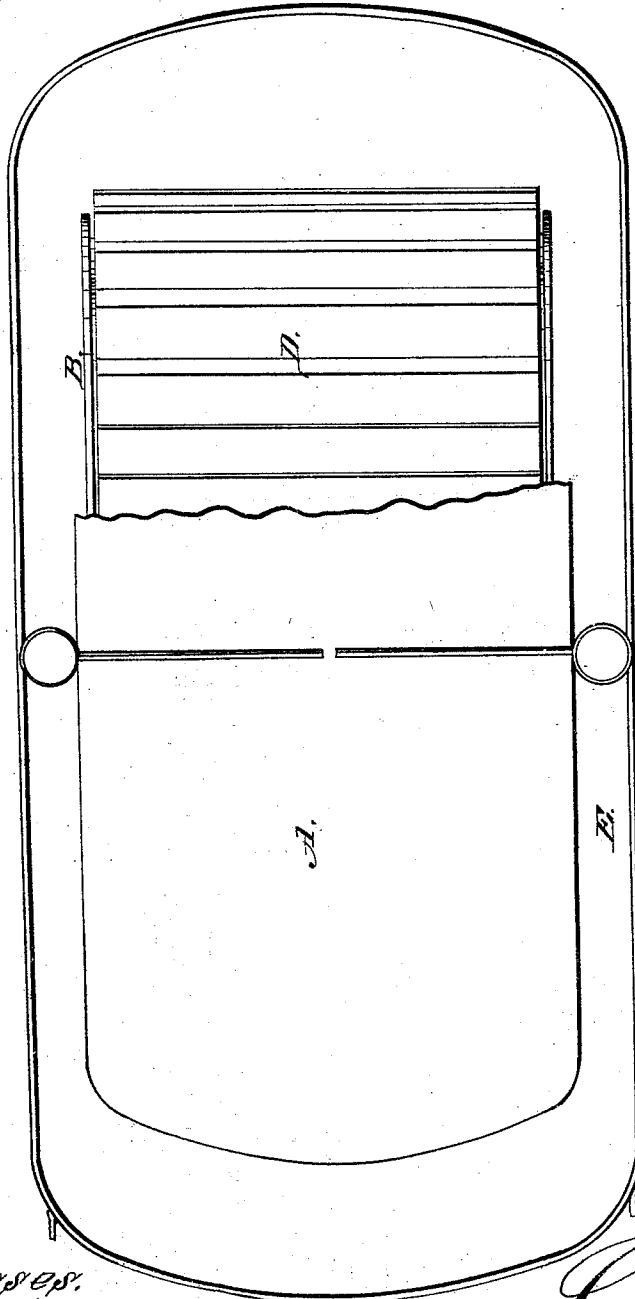
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G. H. Young.
Chain Propeller.

N^o 56,660.

Patented Jul. 24, 1866.

Fig. 2.



Witnesses.

J. M. Carrington
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Inventor

Geo. H. Young
By Wm. H. C. Wood

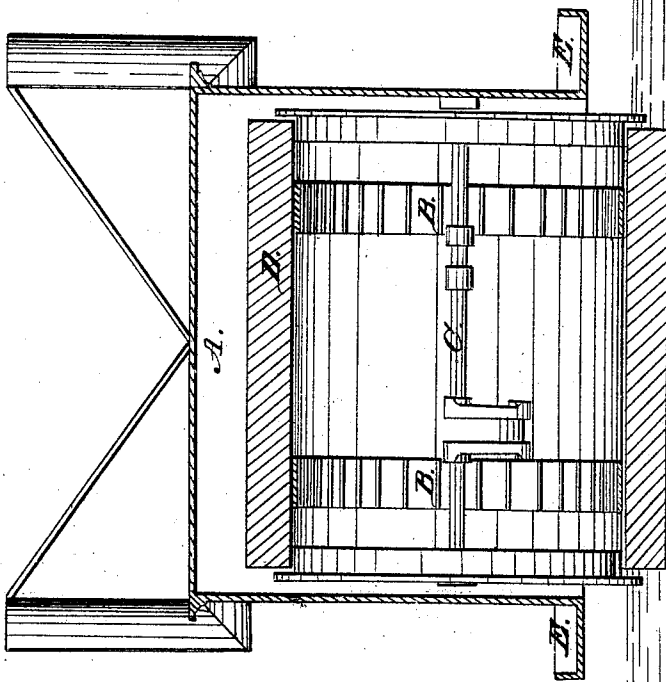
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G. H. Young.
Chain Propeller.

N^o 56,660.

Patented Jul. 24, 1866.

Fig. 3.



Witnesses.

J. M. B. Canning
Jas. A. Service

Inventor

Geo. H. Young
Munroe & Co.
attys.

UNITED STATES PATENT OFFICE.

GEORGE H. YOUNG, OF CHARLESTOWN, MASSACHUSETTS.

IMPROVED MARINE CAR.

Specification forming part of Letters Patent No. 56,660, dated July 24, 1866.

To all whom it may concern:

Be it known that I, GEORGE H. YOUNG, of Charlestown, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Marine Car; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a sectional side elevation of this invention. Fig. 2 is a plan or top view of the same. Fig. 3 is a transverse vertical section of the same.

Similar letters of reference indicate like parts.

This invention consists in the application, for the purposes of marine locomotion, of a system of articulated pontoons or floats in the form of one or more endless belts, in combination with a suitable vessel, in such a manner that said pontoons in themselves serve the double purpose of floats or buoys, and also of buckets or propellers, and thereby the resistance of the vessel moving in the water is greatly reduced.

A represents my car or vessel, which consists of an oblong hull or body with vertical sides, resembling in its external form an ordinary railway-car, the entire design being in many respects analogous to a railway and car. This hull is provided at both ends with large polygonal or chain wheels B, and along its top and bottom a number of small flanged wheels will be applied similar to ordinary railway-truck wheels.

The chain-wheels B are mounted on axles O, and over them is stretched an endless chain, B, composed of a large number of pontoons or floats, which serve the double purpose of buoying up the car and of propelling the same through the water.

When a rotary motion is imparted to the chain-wheels B the endless belt begins to revolve, and by the action of the pontoons on the water the car is compelled to advance a distance equal to the length of belt evolved by the revolution of the chain-wheels.

The car is surrounded with a guard-platform, E, to serve the double purpose of protecting the immersed portion of the pontoons

against accident by collision and to afford room for "working ship." The car is also to be furnished with decks, stowage-room, state-rooms, saloons, and all the details and appliances pertaining to comfort and utility of a first-class river-steamer. It is to be steered by the ordinary rudder.

The great advantage of my marine car over ordinary means of propulsion will be apparent from the following observations: According to the common law of fluid resistance, a body moving in water meets with a "head or impact resistance," caused by the inertia of the particles of water, this resistance being in proportion to the square of the velocity of that body. Besides this "head resistance" there is another kind of resistance termed "skin resistance," which is occasioned by the friction or locking of the particles of water in the fibers, crevices, and inequalities of the immersed surface or "skin" of the vessel, thus creating laminae of dead water around the vessel. This skin resistance increases in a corresponding ratio with the head resistance, and the retarding effects of the skin resistance are generally assumed to be equal to the head resistance. Hence it follows that to overcome these two opposing influences it requires the expenditure of an immense amount of power, and in order to obtain an increase of the velocity of the vessel the power must be increased in proportion to the cube of the velocity. In steamers of the ordinary construction, therefore, very powerful and cumbersome machinery is required, and, furthermore, a large quantity of fuel must be carried, which materially reduce the carrying capacity of the vessel.

By my system of propulsion these disadvantages are avoided. I take advantage of but two properties of water—viz., its buoyancy and its inertia—the buoyancy to sustain the weight of the car and cargo, and the inertia to secure the belt against "slip," and thus effect locomotion.

In carrying out my principle the friction of the water against the sides of the vessel is entirely avoided, said vessel being sustained above the surface of the water by the buoyancy of the pontoons, and the entire friction is reduced to that of the lubricated journal-surface of the various wheels and that occasioned at the moment of the immersion and emersion of

the pontoons, which is so trifling as to come scarcely in consideration. Furthermore, the pontoons are made to enter and leave the water at such an angle as is favorable to the progress of the car, thus obviating impact resistance and utilizing the power that would be otherwise expended in overcoming it. For all these reasons it may reasonably be expected that by my system of marine travel safe railway speeds may be attained on water at an expense of less than one-third of the power now employed in navigating boats at an average speed of twelve knots per hour. Besides this, my marine car has the following advantages:

First, it is eminently suited to canal travel, as the same causes no disturbance in the water, and consequently does not endanger the banks. My car can also be made to ascend an inclined plane in less time than it takes to raise an ordinary canal-boat by means of locks.

Second, the internal capacity of my car is greater in proportion than that of an ordinary vessel on account of its rectangular shape.

Third, all the occupied parts of my car are

above the water-line, thus preventing dampness and admitting light to all parts, and permitting a free circulation of air, rendering it at once comfortable and healthy.

Fourth, it is adapted to the navigation of shallow rivers, no inconvenience being experienced by stranding, as the car, when the pontoons are made strong enough, will almost as readily travel over the muddy bottom of a river as on the surface of the water.

For lake and coasting cars a center-board will be applied to increase lateral resistance and diminish leeways. With two endless belts the turning of the car is facilitated.

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

The articulated pontoons or floats arranged in the form of one or more endless aprons, and traveling over suitable drums, in combination with the car A, constructed and operating substantially as and for the purpose described.

GEORGE H. YOUNG.

Witnesses:

J. B. LOOMIS,
GEO. W. COLBY.