(No Model.)

G. H. POND.

BUOYANT PROPELLER.

No. 434,523. Patented Aug. 19, 1890.

Fig. 1.

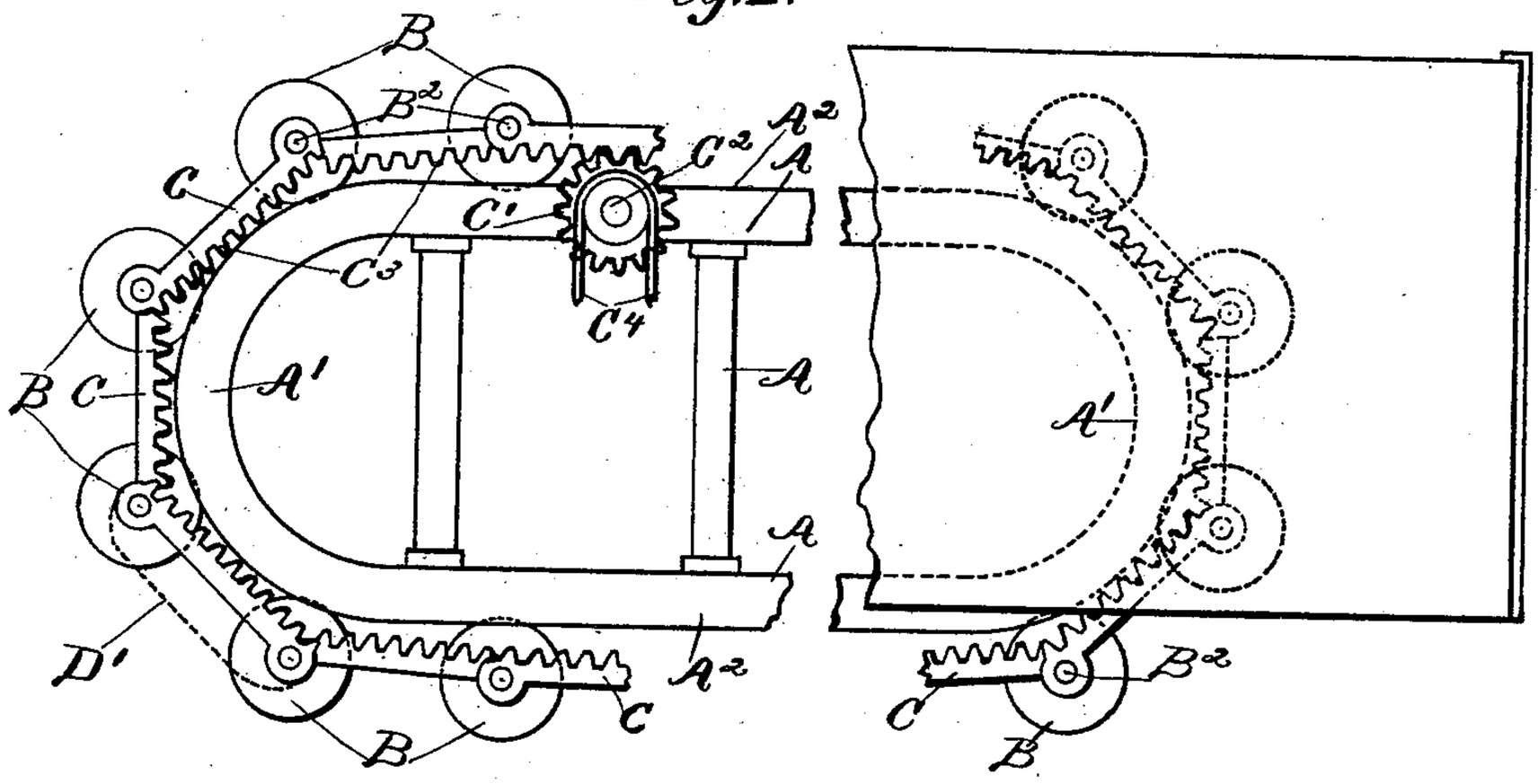


Fig. 2.

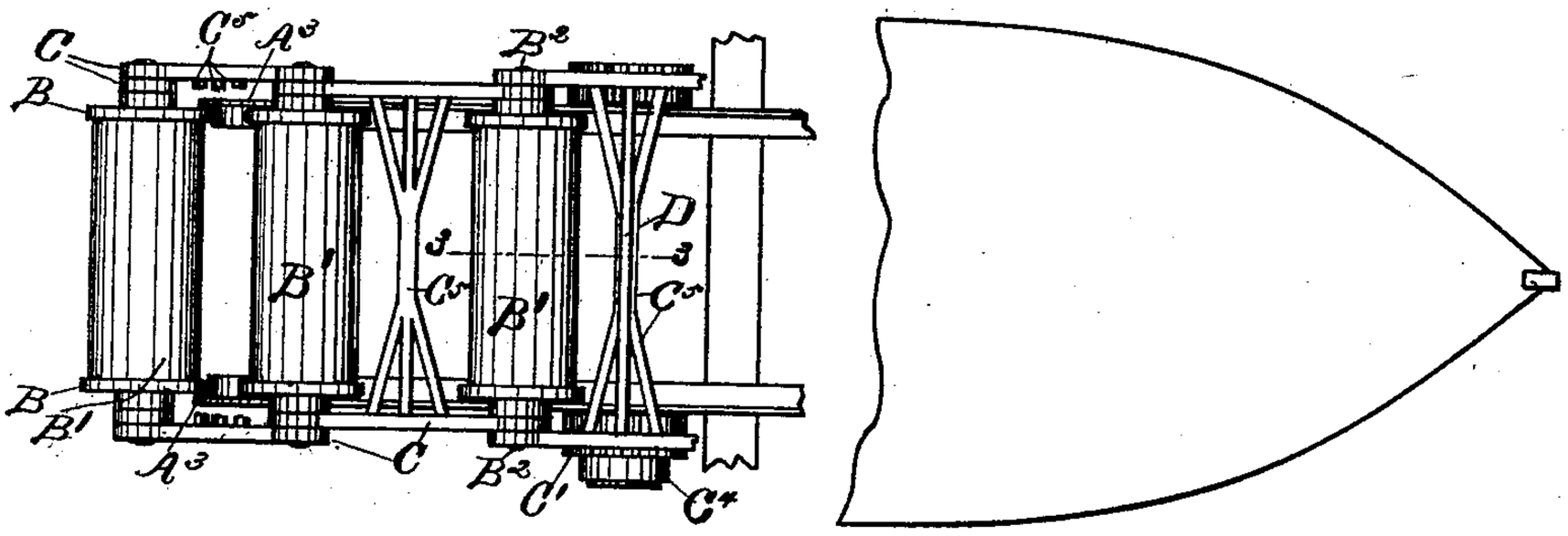
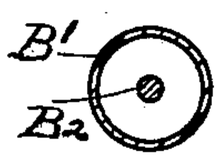


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

GOLDSBURY HARDEN POND, OF GLENS FALLS, NEW YORK.

BUOYANT PROPELLER.

SPECIFICATION forming part of Letters Patent No. 434,523, dated August 19, 1890.

Application filed October 9, 1889. Serial No. 326,417. (No model.)

To all whom it may concern:

Be it known that I, GOLDSBURY HARDEN POND, a resident of Glens Falls, in the county of Warren and State of New York, have invented certain new and useful Improvements in Buoyant Propellers; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

My invention relates to improvements in buoyant propellers; and it consists of the novel construction and combination of parts, hereinafter described and subsequently claimed.

In the accompanying drawings, Figure 1 is a view in side elevation of my improved propeller with the middle part broken away and one of the end portions being stripped of its sheathing to show the interior mechanism. Fig. 2 is a top plan view of the parts shown in Fig. 1. Fig. 3 is a central vertical cross-section of one of the buoyant cross-cylinders and cross-braces, taken on the broken line 3 3 in Fig. 2.

A represents the frame-work of the propeller, which has rounded ends A′, and is provided exteriorly with an endless track or tramway extending around the main frame composed of a rail A^2 on each side of the frame. The rails are preferably provided with a flange A^3, adapted to engage with and retain upon such track the supporting wheels or flanges B, fixed upon and projecting peripherally from the hollow buoyant cylinders B′, which extend across or transversely of the propeller. The cylinders are preferably made of thin or sheet metal closed at the ends to exclude and displace the water and provided with end journals or axles B^2, which are rotary in suitable bearings in an endless series of bars C, joined in such manner as to form what may, for convenience, be styled an "endless chain," which connects all the cylinders with each other in a position to travel upon their wheels or annular flanges B along the endless track. A sufficient number of cylinders are employed to buoy up the propeller and its load.

The cylinder connecting-chain is provided with means located on the frame of the propeller for giving it a movement relative to the frame—for example, a gear-wheel C′, fixed upon shaft C^2, rotary in suitable bearings in the frame, which wheel engages with cogged teeth C^3, formed in the lower edge of the endless-chain links. The gear-wheel may be driven by an engine (not shown) located upon the main frame and connected by a belt C^4 with a pulley fixed upon shaft C^2.

There are two chains connected with the buoyant cylinders—one at each end—which chains are preferably connected with each other by braces C^5, which serve to make in the flexible chains rigid bearings for the cylinder-journals, so that they turn easily with little or no binding friction. As the chain is given a forward movement relatively to the frame by the cogged wheels, the cylinders descend successively into the water at the forward end of the frame and successively rise out of the water at the opposite end, whereby a series of cylinders and wheels is being continually laid in front of the frame and taken up at its rear, the cylinders above the frame traveling over it and those in the water remaining nearly stationary and buoying up the propeller and its load.

The buoyant power of the propeller is directly in proportion to the water-displacement caused by the cylinders, which are located in the water beneath the frame-work.

As the frame-work or propeller advances, it travels on the cylinder flanges or wheels B and causes the latter to rotate.

It is obvious that, the weight of the load being supported by the cylinders themselves, the journal-bearings are relieved from all friction incident thereto; also, that no drums rotary in fixed bearings are required to support the endless chain and cylinders. Consequently there is very little or no binding or wearing friction between the moving parts of the device, thereby increasing the facility of propulsion and durability of the propeller.

I have shown the chain-links provided with teeth C^3, adapted to be engaged by a driving gear-wheel C′; but any known means of communicating motion to or from an endless chain or cable may be employed in connection with my improved mechanism.

When desired, the chain may be provided with a series of cross-boards D of a width sufficient to extend down into the water and afford an auxiliary resistance to the slip of the buoyant cylinders while the propeller is under way.

It is obvious that the series of wheels or annular flanges B and the chains immersed in the water will have the function of a center-board and offer a much greater resistance to the lateral than to the longitudinal movement of the propeller.

The links may be projected outward from the tramway any desired distance to increase the center-board effect.

I have shown by dotted line D′, Fig. 1, a preferred modified form of link.

Heretofore buoyant cylinders have been provided with small flanged wheels adapted to run on a narrow track fitting between the flanges of said wheels. In my construction the wheels are affixed directly to the cylinders and have a larger diameter than said cylinders, and they run on a comparatively wide track, being guarded against excessive lateral movement by a flange on the exterior of each track. The making of the wheels a constituent part of the cylinders avoids the use of separate wheels with small axles and the consequent liability to warp, break, or wear incident to prior constructions.

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

1. In a buoyant propeller, the combination, with the main frame, of parallel endless tracks formed of flanges projecting inwardly from said frame and provided with vertical guards or flanges on their exterior edges and free from such flanges toward the interior, a series of water-displacing cylinders provided with wheels of diameter not less than that of the cylinders forming a constituent part thereof and connected by the endless series of bars, and means for communicating motion to such series, substantially as set forth.

2. In a buoyant propeller, the combination, with the main frame having formed thereon parallel endless tracks, a series of buoyant cylinders having wheels fixed directly thereto and adapted to run in said tracks, and axles extending outside the tracks, of connecting-bars loosely embracing the axles, said bars being provided with teeth adapted to engage driving-wheels arranged on the inside of the tracks, substantially as set forth.

3. In a buoyant propeller, the combination, with the main frame, of a tramway extending around the frame and secured thereto, a series of water-displacing tram-cylinders connected by bars in endless series, a series of cross boards and braces supported by such bars between the individual cylinders, and means for communicating motion to such series of bars, substantially as described.

In testimony whereof I have hereunto set my hand this 5th day of October, 1889.

GOLDSBURY HARDEN POND.

Witnesses:

GEO. A. MOSHER,

W. H. HOLLISTER, Jr.