(No Model.)

A. THOMAS.

PROPELLING MECHANISM FOR VESSELS.

No. 516,747. Patented Mar. 20, 1894.

FIG. 1.

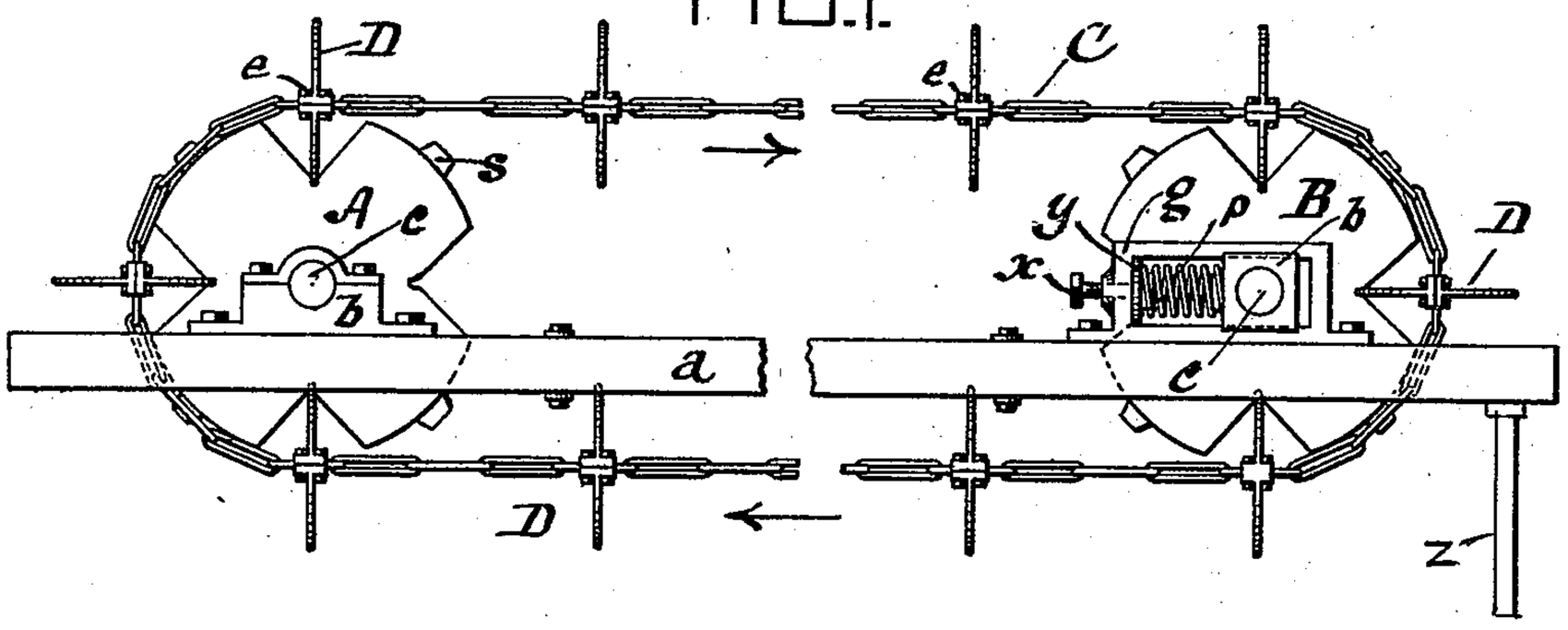


FIG. 2.

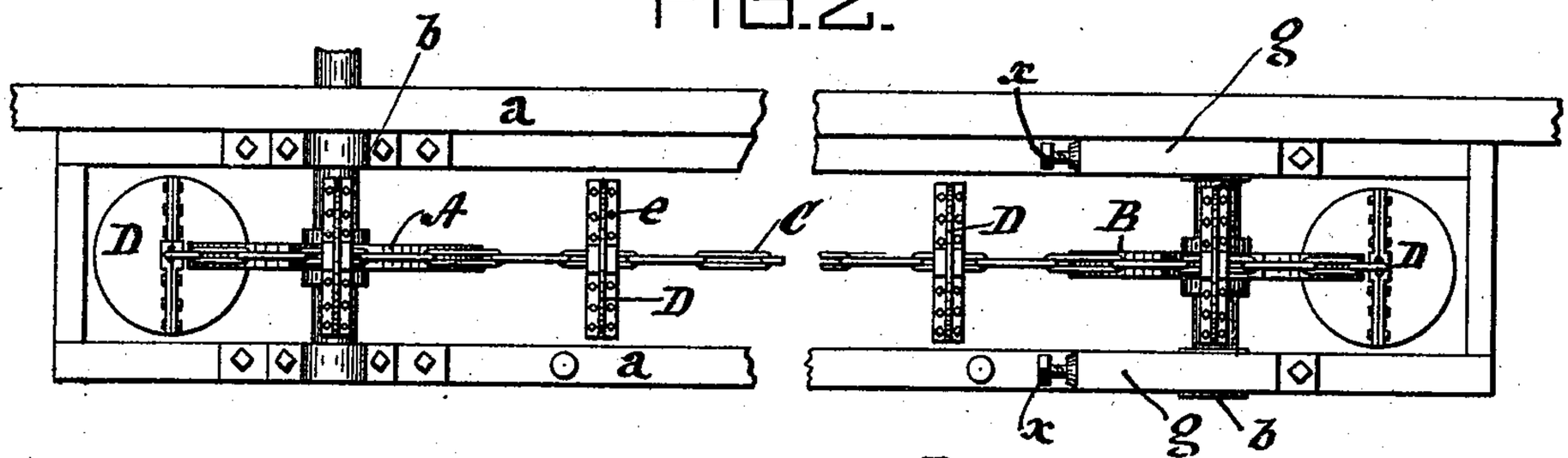


FIG. 3.

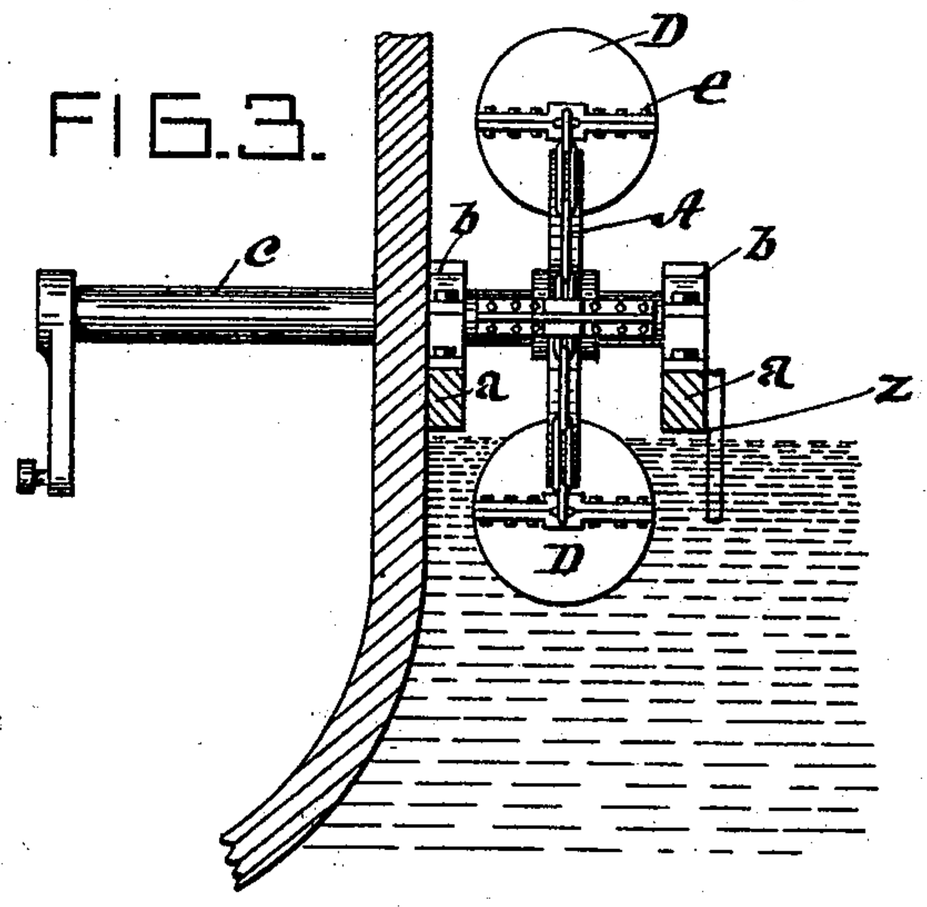
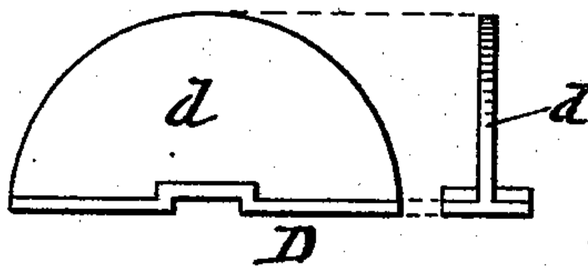


FIG. 4.



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PROPELLING MECHANISM FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 516,747, dated March 20, 1894.

Application filed December 10, 1892. Serial No. 455,105. (No model.)

To all whom it may concern:

Be it known that I, AUGUST THOMAS, a citizen of the United States, residing at Petersburg, Boone county, Kentucky, have invented new and useful Improvements in Propelling Mechanism for Vessels, of which the following is a specification.

My invention relates to the propulsion of vessels, and to the class of propelling mechanism sometimes known as "chain propellers," in which paddles or "buckets" are secured to an endless chain carried upon sprocket wheels and propelled in any convenient manner; its object being to simplify and render the mechanism more efficient.

To this end my invention consists in an endless sprocket-chain or cable carried over suitable sprocket wheels mounted at the side of the vessel and having suitable paddles centrally mounted upon the chain. One of the said sprocket wheels is carried upon adjustable bearings in the frame work so as to accommodate itself to any obstruction such as a piece of drift-wood that might become lodged between the chain and the sprocket-wheel. The sprocket wheels are formed to carry the chain centrally and with recesses adapted to receive and engage the inner edge of the bucket and securely hold it while entering the water. The buckets are centrally mounted upon the chain and are made in two parts adapted to fit upon the chain and be engaged therewith by the bolts securing the two parts of the bucket together. A pair of such mechanisms attached one at each side of the vessel constitute the propelling mechanism in lieu of ordinary side wheels and operated by suitable engine or other motive power.

My invention is illustrated in the accompanying drawings, exhibiting in—Figure 1, a side elevation of the mechanism complete at one side of the vessel; Fig. 2, a plan view of the same; Fig. 3, a cross section of part of the hull and the propelling mechanism at one side, and Fig. 4, a detail showing the construction of the paddles.

Referring now to the drawings: A, and B, designate two sprocket-wheels of suitable dimensions, carried upon a frame-work *a*, *a*, at the side of the vessel. Upon and around the two sprocket-wheels is carried an endless chain or cable C, the lower half of the chain or cable being submerged in a horizontal line beneath the surface of the water sufficiently to cover the buckets D, constructed and secured to the chain or cable as hereinafter described.

I prefer to construct the buckets D, in substantially circular form, in two halves, *d*, secured together by bolts, *e*, passed through their corresponding central flanges,—each half of the bucket being formed to fit and engage the chain or cable. I have shown these buckets as castings, the parts being duplicated from the same pattern; but they may be made of wood secured to suitable skeleton pieces formed and attached to the chain or cable substantially as described. The sprocket wheels A, B, are of the usual construction of such wheels, with sprockets *s* to engage in the links of the chain and with suitable V-shaped peripheral recesses formed and proportioned to admit the bucket, D, and secure its inner edge in the bottom of the recess, as shown in Fig. 1; so that as the bucket turns over, in the revolution of the forward wheel, the resistance encountered at one edge on entering the water is met by the engagement of the opposite edge of the bucket at the bottom of the V-shaped groove of its sprocket wheel.

The framework supporting the apparatus consists of two horizontal sills, *a*, suitably spaced apart and bracketed to the side of the vessel; and carries the journal boxes, *b*, for the wheel-shafts, *c*. The journal boxes of the rear or propelling wheel may be fixedly secured to the sills; but the journal boxes of the forward wheel are sliding boxes secured in suitable guides, *g*. At the rear of each sliding box (in relation to the motion of the vessel) is a coiled spring, *p*, bearing against the box; and behind each spring is a tension screw, *x*, threaded through an abutment, *y*, by which the tension of the spring may be suitably regulated. The immediate object of this construction is to permit the forward wheel to yield rearwardly without breaking the chain in case any obstruction such as a piece of drift-wood should become lodged between the chain and the rear wheel. As a provision, however, against such contingency, I place at the outside of the frame-work, *a*, and extending downward a little below the surface of the water forward of the forward

wheel, a guard-finger, *z*, which suffices in most cases to turn aside any drift out of the way.

Power is applied to the shaft *c* of the rear wheel projected inwardly into the vessel. A similar set of sprocket-wheels with their chains and buckets, being applied at each side of the vessel and driven independently, the vessel may be propelled in either direction or turned in the same manner as by the ordinary "side wheel."

By employing a single chain for each propeller, connected centrally to the buckets the parts are maintained close to the sides of the vessel thus economizing space laterally. The buckets, also, are of moderate size; the chain being of a length to immerse a sufficient number to give the necessary amount of bucket-area for the propelling force required.

I claim as my invention and desire to secure by Letters Patent of the United States—

In a chain-propeller, the combination of an endless chain, buckets secured thereto centrally at equal intervals, sprocket wheels engaging the chain and provided with radial openings with sides flaring outwardly in both directions from the radial axis and a recess at the bottom of the opening—said openings admitting the buckets without contact but engaging their outer edges in the bottom recesses to retain them in radial positions while passing around the wheel substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

AUGUST THOMAS.

Witnesses:
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