

(No Model.)

A. D. ARCHIBALD.

MEANS FOR PROPELLING AND STEERING BARGES.

No. 587,256.

Patented July 27, 1897.

Fig. 1.

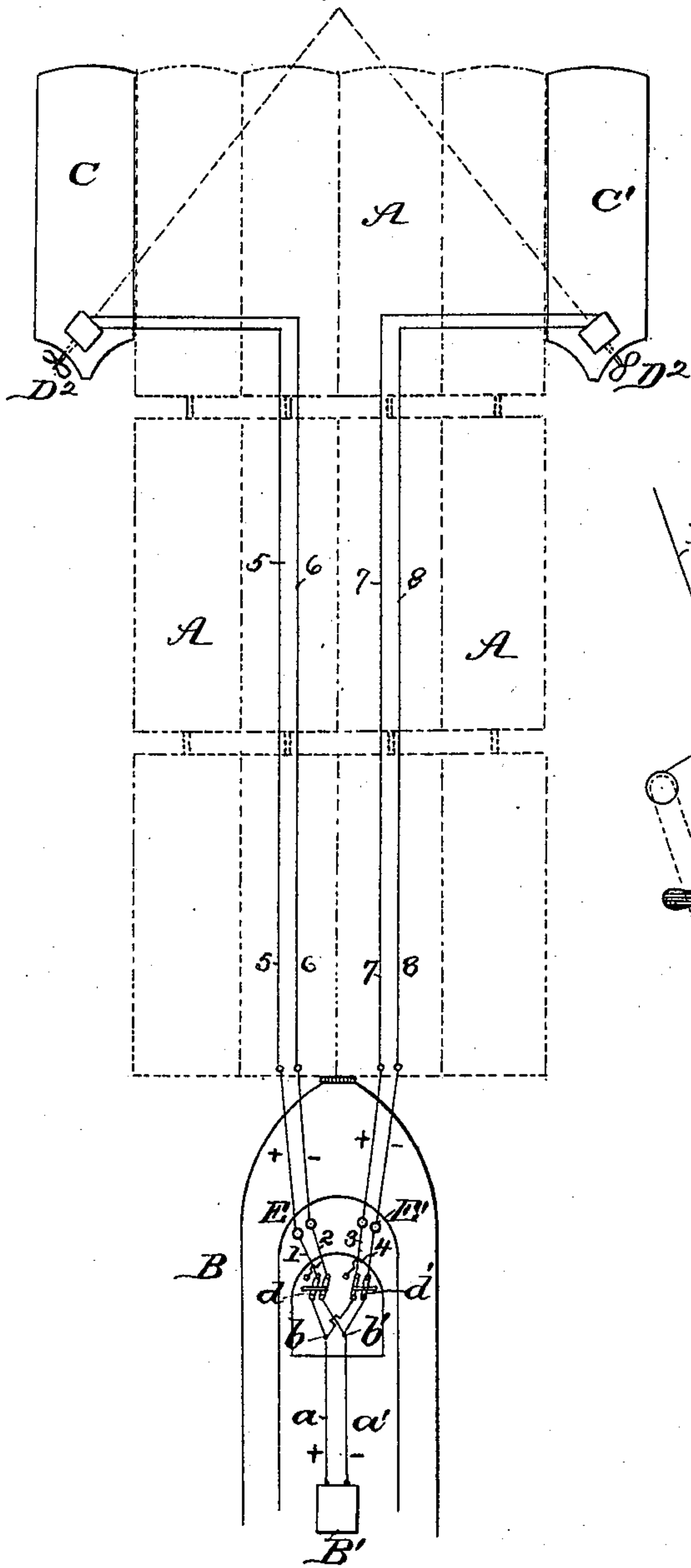
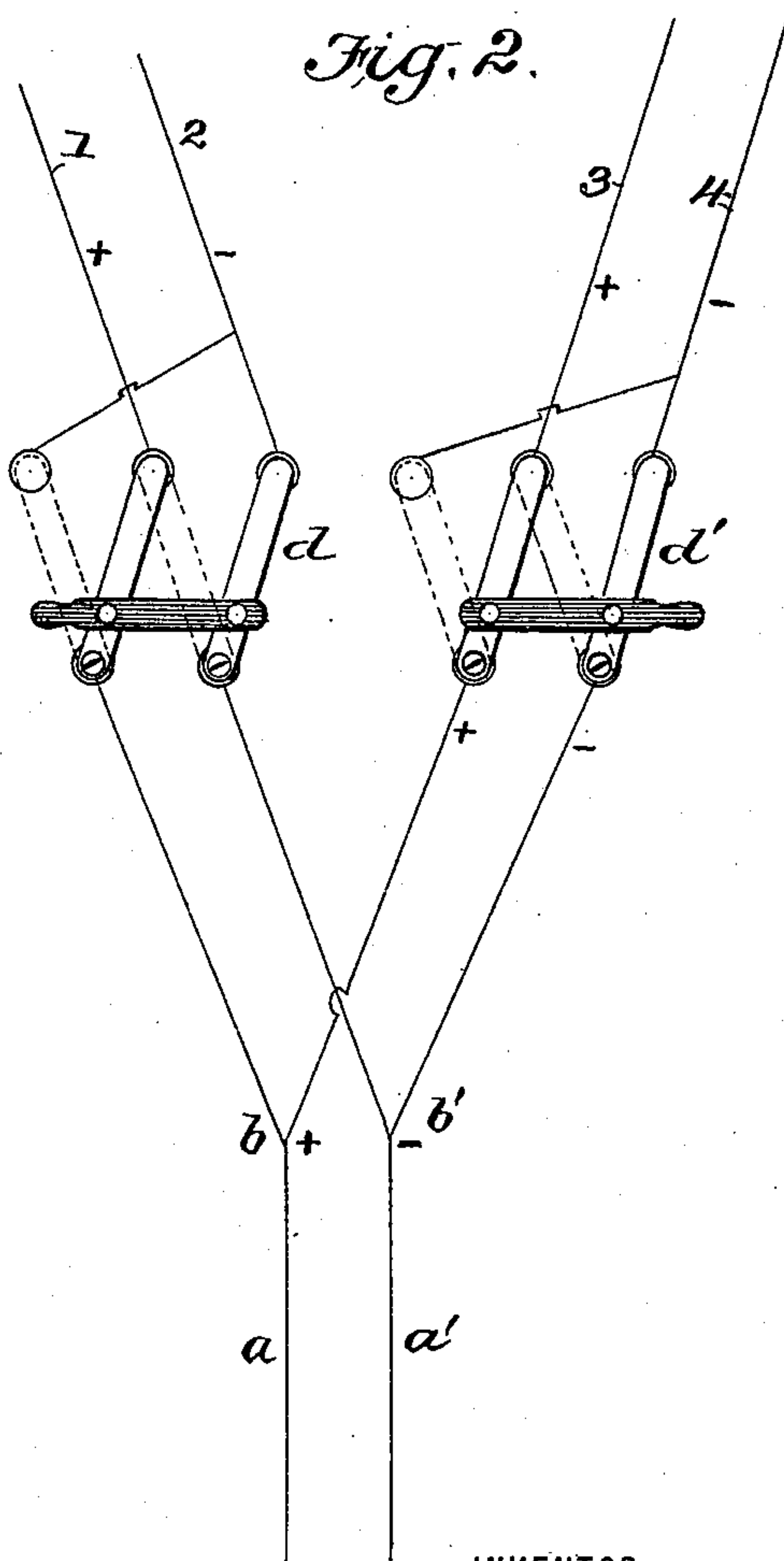


Fig. 2.



WITNESSES:

Jos. A. Ryan
Edw. W. Byrn.

INVENTOR

Alba Dwight Archibald.

BY *Munn & Co.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALBA DWIGHT ARCHIBALD, OF COVINGTON, KENTUCKY.

MEANS FOR PROPELLING AND STEERING BARGES.

SPECIFICATION forming part of Letters Patent No. 587,256, dated July 27, 1897.

Application filed January 22, 1897. Serial No. 620,187. (No model.)

To all whom it may concern:

Be it known that I, ALBA DWIGHT ARCHIBALD, of Covington, in the county of Kenton and State of Kentucky, have invented a new and useful Improvement in Means for Propelling and Steering Barges, of which the following is a specification.

My invention is intended to apply where a number of boats or barges are coupled together in a fleet and propelled by a power craft at the rear. The inertia and momentum of such a fleet of loaded barges in the current of a river are so great that the rudders of the propelling-steamer in the rear have but little effect in steering. In rounding bends in the river dependence is mainly placed on the action of the current and of the steamer's wheel. When there are high winds blowing across the course, such fleets are generally unmanageable and are forced to tie up. The control of such fleets is at all times so uncertain as to result in large losses annually from wreckage and much loss of time each trip in transit.

My invention is intended to overcome these difficulties and supply a positive steering force at the head of the tow under the direct and immediate control of the pilot on the propelling-steamer and at the same time supplement the propelling power of the fleet; and to this end my invention consists in equipping the propelling-steamer with a dynamo-electric machine and providing one or more electric steering and propelling crafts on each side of the fleet of barges near the front and connected to and flanking the fleet, which steering-crafts are equipped each with an electric motor and a propelling screw or wheel driven by said motor. These motors are connected by movable circuit-wires passing rearwardly over the barges to the propelling-craft, where a coupling is made with a permanent circuit to the dynamo. In the pilot-house or other convenient place on the steamer are suitable switches and rheostats to control and shunt the electric current through the motor or motors of either one or both of the steering-crafts, either direct or reverse, so as to use the entire power of the dynamo to push and pull the head of the fleet to the right or left, as hereinafter more fully described, and, further, to increase the steering leverage of the motors my invention includes an arrangement

of the screw or wheel propellers of the steering-crafts at an angle with the longitudinal line of said crafts, the propeller of the starboard craft being mounted with an inclination to starboard and the propeller of the port craft with an inclination to port, the angle of the one with the line of the fleet being equal to the angle of the other, so that the resultant of their combined forces when operating equally will be movement in a straight line.

Figure 1 is a plan view of a fleet of barges and steering and propelling crafts arranged in accordance with my invention, and Fig. 2 is a diagram view of one of the switches.

Referring to Fig. 1, A represents a gang of twelve barges which are lashed together. B is the propelling-steamer, whose bow is arranged to press against the rear of the gang of barges, and C C' are the two flanking steering-crafts arranged at the front end of the gang of barges, one being upon each side and lashed to the gang.

On the propelling-steamer B is mounted the dynamo B', connected by wires *a a'* of opposite polarity to the switch-posts *b b'*, (located at any convenient place,) where the current is divided into the starboard and port circuits.

At *d d'* (in the pilot-house conveniently for the pilot or elsewhere, as desired) are placed the reversing-switches, Fig. 2, and rheostats controlling the currents to the motors.

At E E' are the coupling-points of the permanent circuit-wires 1 2 3 4 with the movable circuit-wires 5 6 7 8, which are carried over the barges on suitable supports to the motors of the steering-crafts C C', which have geared to the motors screw-propellers D² or other form of driving-wheel. Now when it is desired to turn the fleet of barges to the right the switch *d* is turned so as to close the port circuit through the motor of the steering-craft C, and the switch *d'* is turned so as to cut out or reverse the current in the starboard circuit through the motor of the steering-craft C', and vice versa.

The form of switch used (see Fig. 2) is an ordinary one in which two switch-bars connected by an insulated cross-bar play upon three contact-plates, two of which contact-plates are connected with one circuit-wire and the middle plate to the other circuit-wire. The movement of these switch-bars reverses

the current in the circuits, as shown in dotted lines, and when left midway between the plates cuts off the circuit. When the course of the fleet is straight, the resistance of the two circuits being practically the same, the current with both switches closed would act equally through both motors, greatly assisting the propelling of the fleet or, if reversed, in stopping the same.

It is evident that the operation of the steering power is conveniently effected, and instead of being dependent on the uncertain action of the river-currents in conjunction with the power exerted at the rear of the fleet the tow is perfectly controlled by the quick and sure application of a positive force at the head of the fleet at the option of the pilot on the steamer at the rear.

It is intended that the steering-crafts C C' shall also be utilized for carrying freight.

With my invention there is an avoidance of great risk of loss, the time of making the trip is shortened, a given amount of power in the steamer is made more effective in transporting a larger quantity of freight, and there is a great saving in the expense of navigation.

With reference to the steering-crafts C C' having propeller-shafts set at an angle to the longitudinal axes of the crafts, I would state that these are designed to be used in pairs,

and when so used the two flanking crafts C C' may be lashed directly together and propelled in a straight line by the resultant effect of the oblique propellers, so that these steering-crafts may be transported or propelled from place to place apart from the gang of barges.

What I claim is—

1. A pair of steering-crafts each having its propeller set obliquely to the longitudinal axis of the craft and with the propeller-shaft of one craft at a reverse angle to that of the other craft substantially as shown and described.

2. The means herein described for propelling and steering gangs of barges, comprising a propelling-steamer arranged in rear of the gang and provided with a dynamo and electric switches, and one or more steering-crafts arranged to flank the gang, one on each side near the front, said steering-crafts being provided with electric motors and propellers geared thereto, and connecting circuit-wires for directing the current from the dynamo on the steamer to either or both of the motors on the steering-crafts substantially as and for the purpose described.

ALBA DWIGHT ARCHIBALD.

Witnesses:

C. J. ANNIL,

ED. L. BROWN.